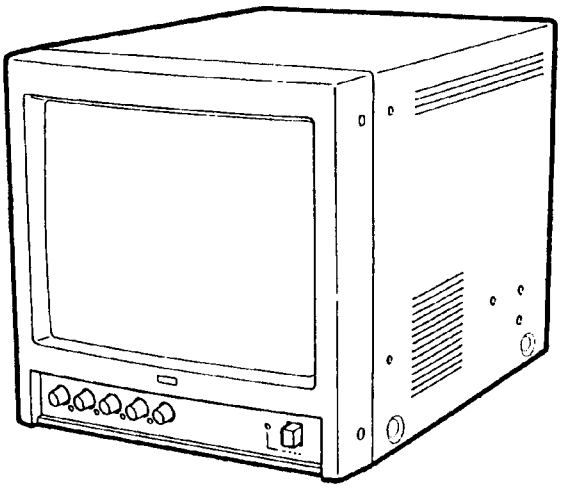
JVC

SERVICE MANUAL

COLOR VIDEO MONITOR

TM-A9U

BASIC CHASSIS
A10



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SPECIFICATIONS

Item	Content	Item	Content
Color system	NTSC	Video Input	1Vp-p, 75Ω, negative sync., termination switch provided. Bridged connection is possible. (BNC connector ×2)
Picture tube	9" diagonally measured,90°deflection, in-line gun, Vertical stripe phosphor pitch 0.5 mm		
Screen size (W×H)	$6\text{-}^{13}/_{16}$" × $5\text{-}^{3}/_{8}$" (173×136mm)	Audio Input	500mVrms, high impedance, Bridged connection is possible. (RCA pin jack ×2)
High Voltage	22kV ± 1kV(at zero been current)		
Audio Output	1W (monaural)		
Speaker (Built-in)	$3\text{-}^{3}/_{16}$" (8cm) Round Type, 8Ω	Power requirements	120V AC,60Hz
		Power consumption	0.66A (max)
Scanning freq.	(H) : 15.734kHz (V) : 59.94Hz		
Hori. resolution	280 TV line or more	Dimension(W×H×D)	$8\text{-}^{3}/_{4}$" × 9" × $12\text{-}^{1}/_{2}$" (222mm×227mm×317mm)
		Mass	15.4 lbs(7.0kg)

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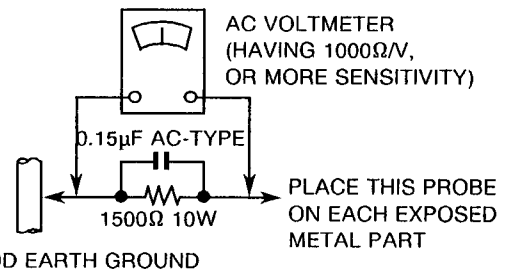
SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection,no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contrained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and ISOLATED(NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B_1 setting should be checked or adjusted (See ADJUSTMENT OF B_1 POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**
    (Safety for Electrical Shock Hazard)
    After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs,metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

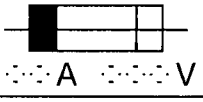
(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

• Alternate Check Method
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).



11. **High voltage hold down circuit check.**
    After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.
    See item **"How to check the high voltage hold down circuit"**.

This mark shows a fast operating fuse, the letters indicated below show the rating.



OPERATING INSTRUCTIONS

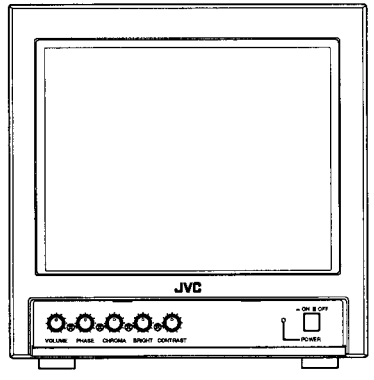
JVC®

TM-A9U COLOR VIDEO MONITOR

COLOR VIDEO MONITOR

TM-A9U

INSTRUCTIONS



JVC®

JVC PROFESSIONAL PRODUCTS COMPANY
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21 Finchdene Square, Scarborough Ontario M1X 1A7

Printed in Japan
CQ40054-001
1195-K-U-VP

For Customer Use:
Enter below the Serial No. which is located on the rear of the cabinet. Retain this information for future reference.

Model No. **TM-A9U**

Serial No.

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(No.51062) 1-1

Thank you for purchasing this JVC color video monitor. Before using it, read and follow all instructions carefully to take fullest advantage of the monitor's performance.

SAFETY PRECAUTIONS

WARNING:
TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

INFORMATION

CAUTION: Changes or modification not approved by JVC could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

■ PRECAUTIONS

- Prevent inflammables, water and metallic objects from entering the unit.
- Do not remodel or disassemble the unit. As the unit incorporates circuitry generating high voltage, physical danger and malfunctioning of the unit itself may result.
- Remove the AC power cord from the AC outlet when you are not using the unit for a long period.

■ HANDLING

- Do not apply shocks or vibrations. Malfunctioning of the unit is likely to result.
- Do not block the ventilation slots.
- Do not use it in extremely hot places. Exposed to the direct sunlight for a long period of time or placed near a heater, the cabinet could become deformed, or the performance of the internal components may deteriorate.
- Do not place the unit near appliances generating strong electric or magnetic fields. Noisy or unstable pictures are likely to result.
- Keep the monitor clean by wiping the cabinet and CRT screen with a piece of soft cloth. Do not apply thinner or benzine. These chemicals can damage the surface finish and cause printed letters to be erased. Clean excessive soiling with a diluted neutral cleanser, then wipe away the cleanser with a dry cloth.

SCREEN BURN

- It is not recommended to keep a certain still image displayed on screen for a long time as well as displaying extremely bright images on screen. This may cause a burning (sticking) phenomenon on the screen of cathode-ray tube. This problem does not occur as far as displaying normal video playback motion images.

FEATURES

- **9-inch TV-grade cathode-ray tube**
- **Horizontal resolution of 280 TV lines or more**
- **Professional metal cabinet design**
- **Bridge-connectable input terminals (1 line for video, 1 line for audio)**

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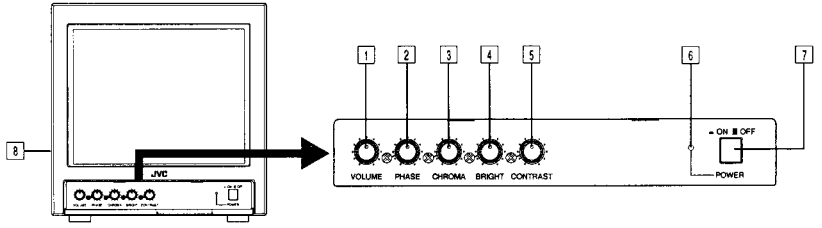
CONTROLS AND FEATURES

■ FRONT



1 VOLUME control
Turn to adjust speaker volume.

2 PHASE control
Turn to adjust picture hue, using natural skin color as a reference.

3 CHROMA control
Turn to adjust picture color density according to your requirements.

4 BRIGHT control
Turn to adjust picture brightness according to your requirements.

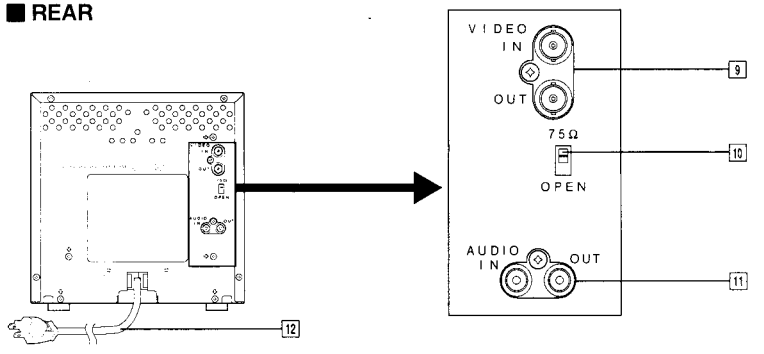
5 CONTRAST control
Turn to adjust picture contrast according to your requirements.

6 Power indicator
Glows to indicate that power is on.

7 POWER switch
Press to turn the power on or off.

8 Speaker
The built-in speaker is located on the side panel.

■ REAR



9 VIDEO IN (video input), VIDEO OUT (video output) terminals
These are the input and output (bridge-connected output) terminals (BNC) for the video signal. When a signal is input through the IN terminal, a bridge-connected (looping) output can be obtained from the OUT terminal.

Note:
- Confirm if the termination switch setting matches the VIDEO terminal connection.

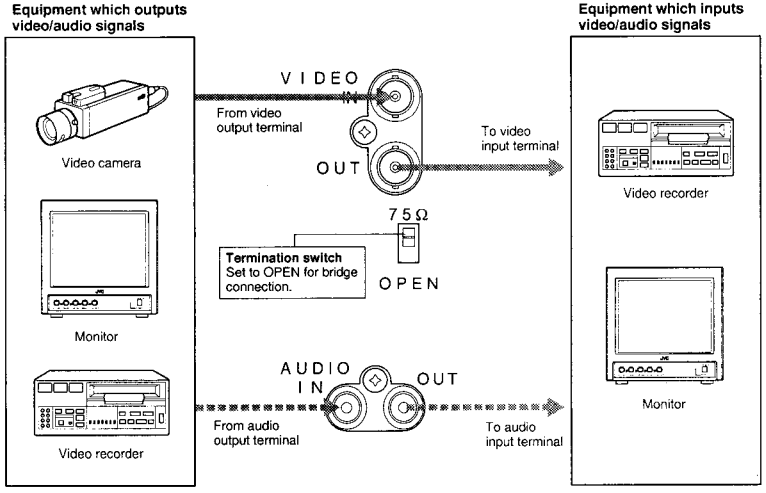
10 Termination switch
Set to OPEN for bridge connection; set to 75Ω for input signal only.

11 AUDIO IN (audio input), AUDIO OUT (audio output) terminals
These are the input and output (bridge-connected output) terminals (RCA) for the audio signal. When a signal is input through the IN terminal, a bridge-connected (looping) output can be obtained from the OUT terminal.

12 Power cord
Connect the power plug to an AC outlet (120 V AC, 60 Hz).

Note:
- The monitor may be equipped with a 3-blade grounding-type plug. If you are unable to insert the plug into the outlet, contact your electrician.

CONNECTION EXAMPLE



Notes:
- The illustration above only shows some possible connection examples, for reference. Terminal types and/or connections may differ according to the component connected. Also refer to the Instruction Manual of the component to be connected.
- Before connecting, be sure to turn off the power of all the components.
- For video signal connection, use only a 75Ω coaxial cable.
- Input and output terminals for video or audio are bridge-connected. Do not apply two input signals to both (input and output) terminals at the same time.
- For a bridge (loop) connection, connect each of input and output terminals on the monitor to separate video components. For example, if both of them are connected to a video recorder, the picture will shake abnormally except when in the recorder's play mode. This phenomenon occurs due to a signal circulating around inside a certain component, and is not a malfunction.

BASIC OPERATION

1. To turn the power on:
Push the POWER switch.

The power indicator glows green. To turn off power, push the POWER switch again, and the power indicator goes off.

2. To adjust the audio level:

Turn the VOLUME control to the right to increase the level, or to the left to decrease the level.

PICTURE ADJUSTMENTS

Turn a separate front panel control to adjust picture contrast, picture brightness, picture color density and picture hue respectively:

■ CONTRAST (picture contrast) control—

Softer **Clearer**

CONTRAST

■ CHROMA (picture color density) control—

Thinner **Denser**

CHROMA

■ BRIGHT (picture brightness) control—

Darker **Brighter**

BRIGHT

■ PHASE (picture hue) control ——————

Purplish **Greenish**

PHASE

TROUBLESHOOTING

Before concluding a problem has occurred, check the following points. If the problem persists after carrying out the checks, disconnect the power cord from the AC outlet and consult the dealer from whom you purchased the monitor.

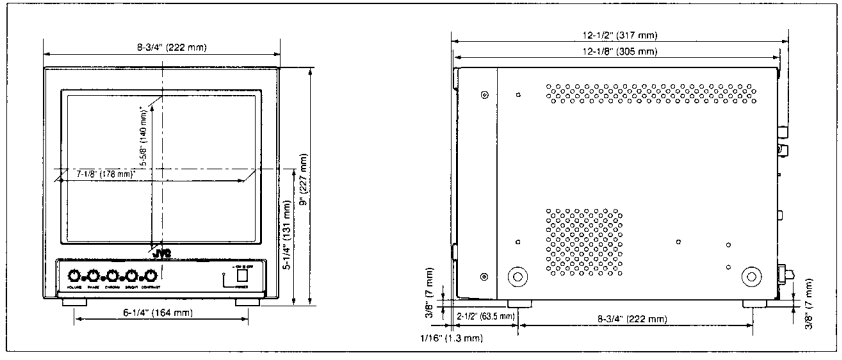
Problems	Points to be checked	Measures
No power supply.	Is the power plug connected to the AC outlet?	Securely connect the power plug to the AC outlet.
No picture or sound.	Is the monitor turned on?	Press the POWER switch to turn the monitor ON (see pages 4 and 5).
	Is an output signal coming in from a source component?	Perform required settings on the output component.
	Is the cable connected improperly?	Connect both the video/audio signal cables securely and properly (see pages 4 and 5).
Normal picture but no sound.	Is audio level set to the minimum?	Adjust the VOLUME control (see pages 4 and 5).
	Is the audio signal cable connected improperly?	Connect the audio signal cable securely and properly (see pages 4 and 5).
Normal sound but no picture.	Is the video signal cable disconnected or connected improperly?	Connect the video signal cable securely and properly (see pages 4 and 5).
No color, wrong color, or dark picture.	Have the picture settings been changed?	Adjust CHROMA, BRIGHT, CONTRAST and/or PHASE controls (see pages 4 and 6).
Shaking picture.	Is there a device generating a strong magnetic field (motor, transformer, etc.) near the monitor?	Move it away from the monitor until the picture becomes stable.
Unnatural, irregularly colored or distorted picture.	Is there a speaker, magnet or any other magnetized object near the monitor?	After moving it away from the monitor, turn the monitor's power off. After 30 minutes or more, turn the power on again.

SPECIFICATIONS

Type	: Color video monitor
Color system	: NTSC
Picture tube	: 9" measured diagonally, 90° deflection, in-line gun, vertical stripe phosphor pitch 0.5 mm
Screen size (W x H)	: 6-13/16" x 5-3/8" (173 x 136 mm)
Scanning frequency	: (H) 15.734 kHz (V) 59.94 Hz
Horizontal resolution	: 280 TV lines or more
Video input	: 1 line, BNC x 2 (with 1 bridge-connected output), 1.0 V p-p, 75Ω, negative sync, bridge connection possible (termination switch provided)
Audio input	: 1 line (monaural), RCA x 2 (with 1 bridge-connected output), 0.5 V rms, high impedance, bridge connection possible
Audio power output (effective)	: 1 W (monaural)
Built-in speaker	: 3-3/16" (8 cm) round, 8Ω x 1
Operation temperature	: 0 – 40 °C (32 – 104 °F)
Relative humidity	: 20 – 80 %
Power requirements	: 120 V AC, 60 Hz
Power consumption	: 0.66 A maximum
Dimensions (W x H x D)	: 8-3/4" x 9" x 12-1/2" (222 x 227 x 317 mm)
Weight	: 15.4 lbs (7.0 kg)

Dimensions

* The faceplate dimensions shown are larger than the visible portion of the screen (screen size).



E. & O.E. Design and specifications subject to change without notice.

SPECIFIC SERVICE INSTRUCTIONS

REPLACEMENT OF CHIP COMPONENT

■CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■SOLDERING IRON

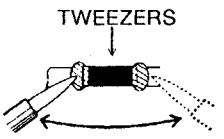
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■REPLACEMENT STEPS

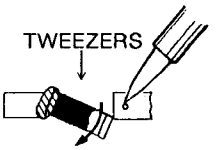
1. How to remove Chip parts

●Resistors, capacitors, etc

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

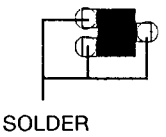


(2) Shift with tweezers and remove the chip part.

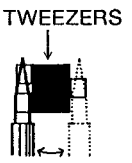


●Transistors, diodes, variable resistors, etc

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

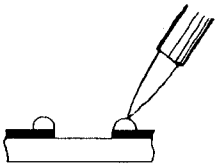


Note: After removing the part, remove remaining solder from the pattern.

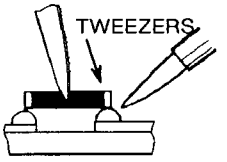
2. How to install Chip parts

●Resistors, capacitors, etc

(1) Apply solder to the pattern as indicated in the figure.



(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

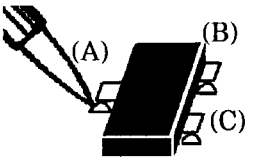


●Transistors, diodes, variable resistors, etc

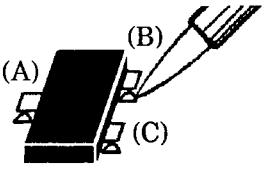
(1) Apply solder to the pattern as indicated in the figure.

(2) Grasp the chip part with tweezers and place it on the solder.

(3) First solder lead A as indicated in the figure.



(4) Then solder leads B and C.



DISASSEMBLY PROCEDURE

[Inportant]

Always remove the electrical cord from the wall outlet before assembly and disassembly because certain parts will still be electrically changed even when the power switch is turned off.

REMOVING THE TOP COVER

1. Remove 4 screws Ⓐ and 4 screws Ⓑ.
2. The top cover can be removed by spreading its lower part sightly and raising it while pulling it towards the rear of the unit.

REMOVING THE REAR PANEL

- After removing the top cover.

1. Remove 5 screws Ⓒ.
2. Pull the upper part slightly to the rear and pull the chassis back to remove it.

REMOVING THE BOTTOM COVER

- After removing the top cover and rear panel, follow the steps given below.

1. Place the front surface downward, then stand the bottom cover while facing it toward you.
   At this time, care must be exercised not to damage the front panel and CRT surface.
2. Loosen the two screws marked Ⓓ as shown in the figure.
3. Remove the one screw marked Ⓔ as shown in the figure.
4. After pulling the rear panel side of the bottom cover toward you slightly, keep the chassis base from the bottom cover slightly.
5. When the chassis base has been kept from the bottom cover slightly, pull the bottom cover upward while leaving the situation as it is, then remove the bottom cover.
6. When the bottom cover has been removed, you can check the main PWB and control PWB in such a situation.

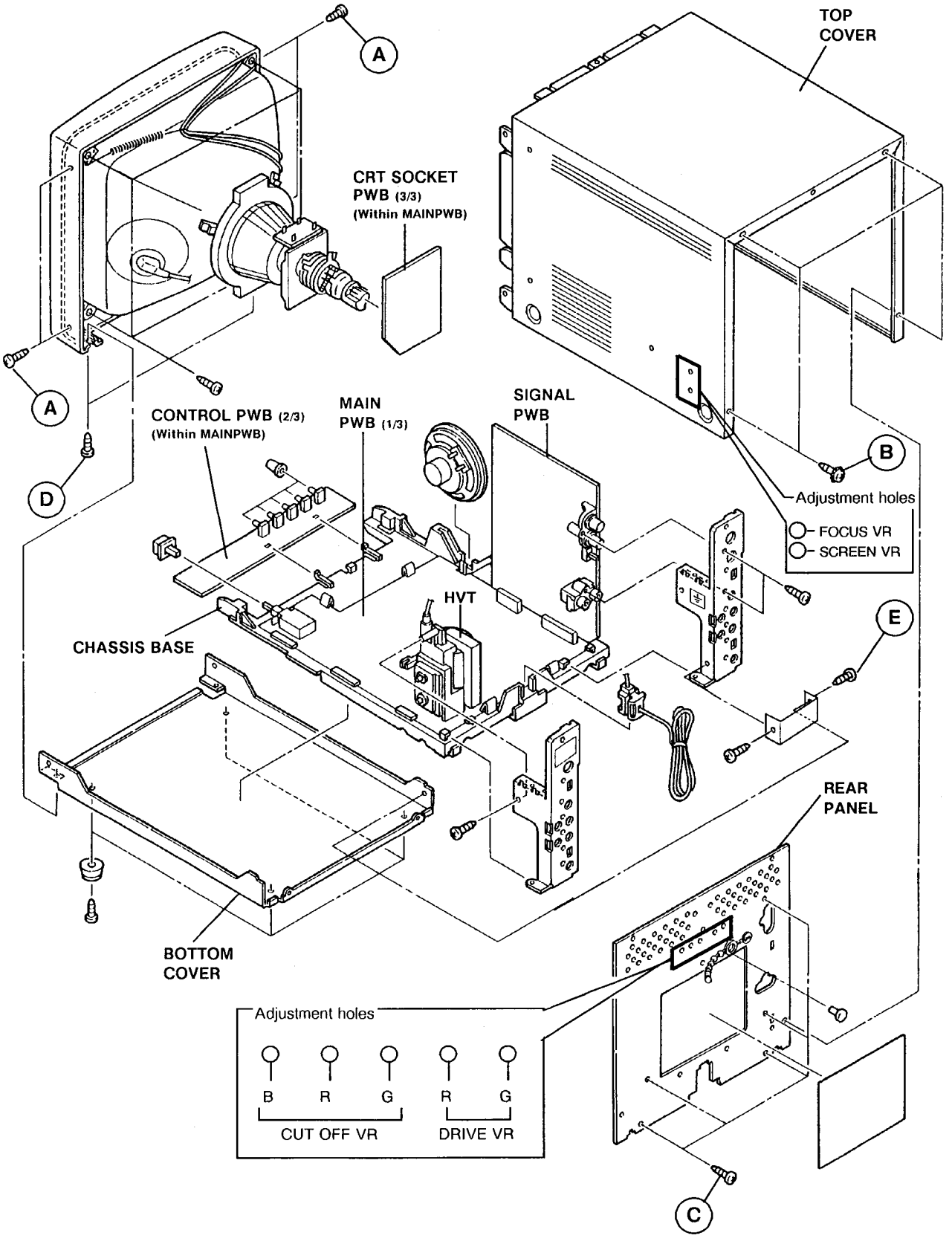
[CAUTION]

* When erecting the chassis, be careful so that there will be no contacting with other PW board.

* Before turning on power,make sure that the wire connector, CRT earth wire and other connectors properly connected.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.


A
TOP
COVER
CRT SOCKET
PWB (3/3)
(Within MAINPWB)
A
CONTROL PWB (2/3)
(Within MAINPWB)
MAIN
PWB (1/3)
SIGNAL
PWB
B
Adjustment holes
FOCUS VR
SCREEN VR
D
HVT
E
CHASSIS BASE
REAR
PANEL
BOTTOM
COVER
Adjustment holes
B
R
G
R
G
CUT OFF VR
DRIVE VR
C

SERVICE ADJUSTMENTS

BEFORE STARTING ADJUSTMENTS

1. Before adjusting, switch ON the power of the set and measuring equipment and allow these to warm up at least 30 minutes.
2. Confirm the proper AC power voltage is being supplied.
3. Use care not to disturb adjustable parts (variable resistors, transformers, capacitors, etc.) not specifically mentioned in these adjustment steps.
4. Refer to adjustment settings and set user operated controls (BRIGHT, CONTRAST, PHASE, CHROMA, etc.) to the indicated positions.

MEASURING EQUIPMENT FIXTURES

- DC voltmeter (or digital voltmeter)
- Oscilloscope
- Signal generator (NTSC systems)
  - Color bar and split color bar patterns
  - Crosshatch pattern
  - Cross pattern
  - Red raster pattern
  - Green raster pattern
  - Blue raster pattern
- Color analyzer or color temperature measurement device.

ADJUSTMENT SETTINGS

1. **Front controls**

CONTRAST	.....	Center click position
BRIGHT	.....	Center click position
CHROMA	.....	Center click position
PHASE	.....	Center click position
VOLUME	.....	Minimum position

2. **Rear switch**

   TERMINATION SW (75Ω / OPEN): 75Ω

3. **On PW board switch**

   Positioned N side of each SERVICE SW on PW boards.

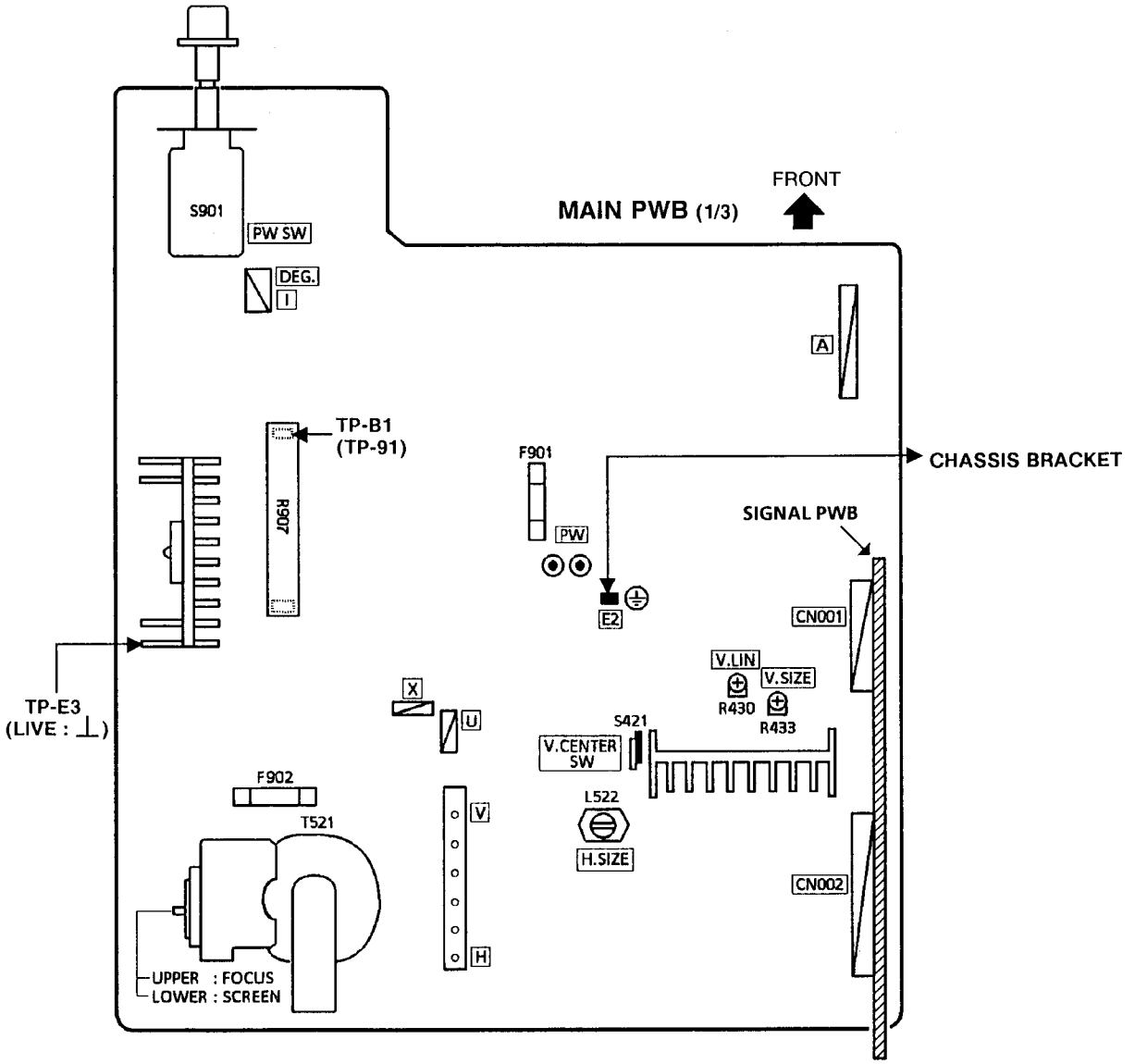
FOCUS, SCREEN, CUT OFF AND DRIVE ADJUSTMENT HOLES

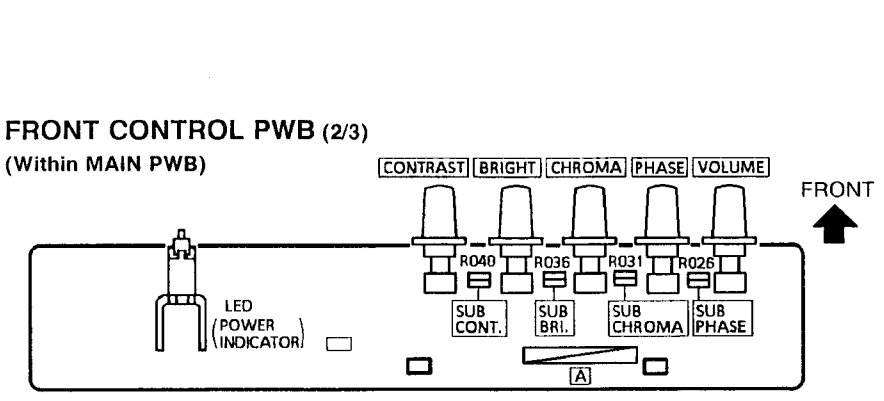
- The Focus and Screen adjustment holes are on the side of the set.
- The Cut off and Drive adjustment holes are on the rear panel of the set.

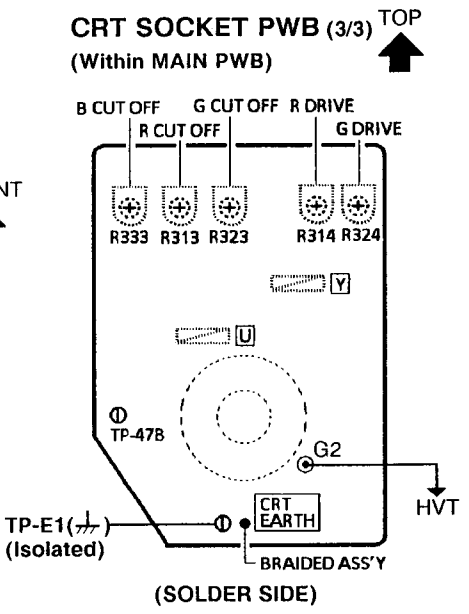
[mportant]

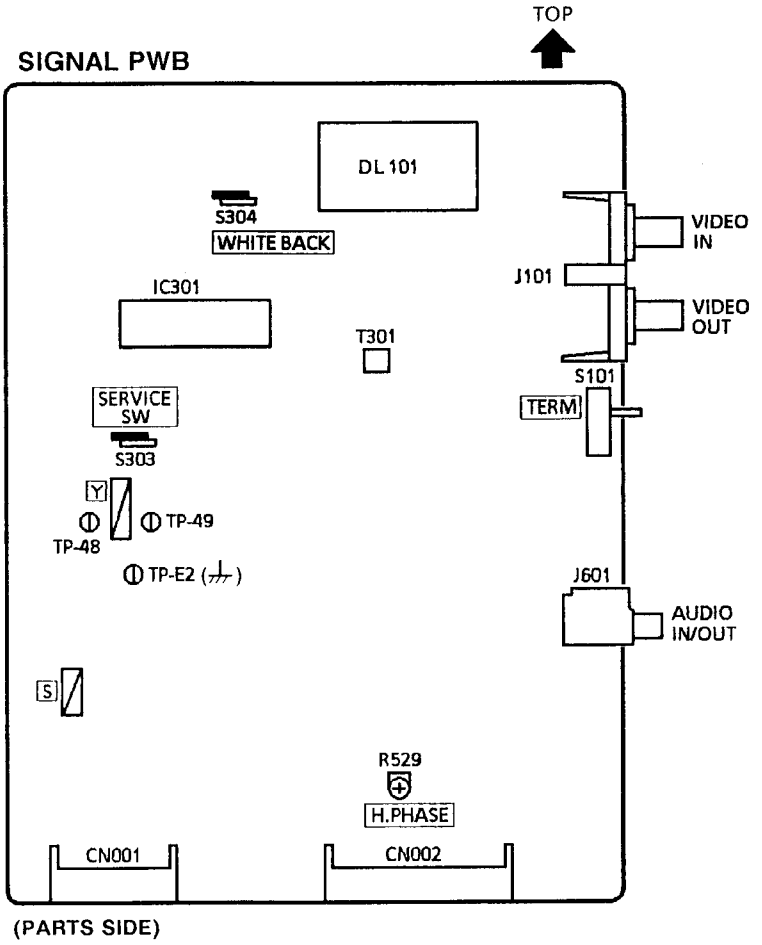
Be sure to use a non-metallic driver for adjusting there VRs.
A metallic driver can cause damage by shorting.

ADJUSTMENT LOCATIONS



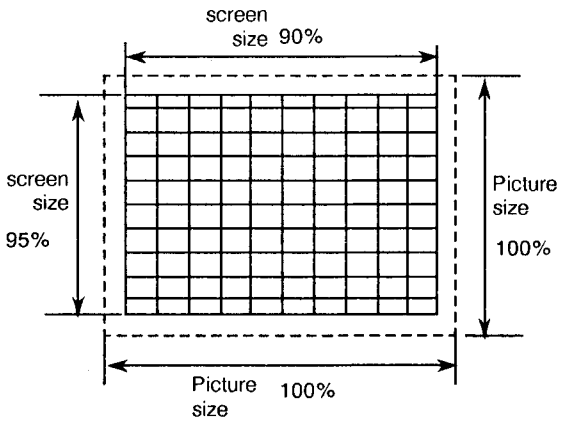




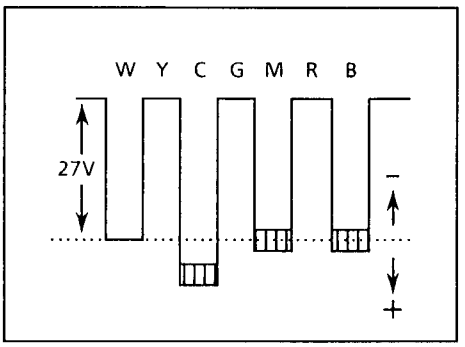
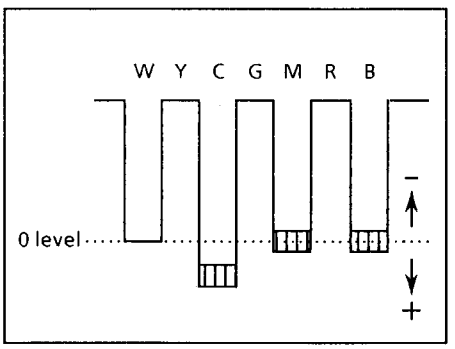

SIGNAL PWB
TOP
DL101
S304
WHITE BACK
IC301
T301
VIDEO IN
J101
VIDEO OUT
S101
TERM
SERVICE SW
S303
Y
TP-49
TP-48
TP-E2
J601
AUDIO IN/OUT
S
R529
H.PHASE
CN001
CN002
(PARTS SIDE)

ADJUSTING STEP

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
B1 power supply check	**DC voltmeter** **Signal generator**	**TP-B1(TP-91)** **TP-E3(⊥)**		1. Input the all black signal. 2. Confirm that the voltage between TP-B1 and TP-E3 is 115V ±1V.
Focus adjustment	**Signal generator**		**FOCUS VR** **[In HVT]**	1. Input the cross-hatch signal. 2. Turn the FOCUS VR stop at the farthest position to the left that is still within the optimum cross-hatch focus range.
Horizontal Size **Horizontal Center adjustment**	**Signal generator**		**H. SIZE COIL** **(L522)** **[MAIN PWB]** **H. PHASE VR** **(R529)** **[SIGNAL PWB]**	• The brightness and contrast adjustments must be completed. 1. Input the cross-hatch signal. 2. Adjust the H. PHASE VR so the screen moves to the center of the CRT. 3. Adjust the H. SIZE coil so the horizontal size is 90% (Fig. A)
Vertical Size **Vertical Center** **Vertical Linearity adjustment**	**Signal generator**		**V. SIZE VR** **(R433)** **V. CENTER SW** **(S421)** **V. LIN VR** **(R430)** **[MAIN PWB]**	• The BRIGHT and CONTRAST adjustments must be completed. 1. Input the cross-hatch signal. 2. Adjust the vertical linearity with the V.LIN VR. 3. Adjust the V.CENTER SW so the screen moves to the center of the CRT. 4. Adjust the V.SIZE VR so the vertical size is 95% (Fig. A). 5. Readjust the V.LIN VR as necessary.
BRIGHT adjustment	**Signal generator**		**SUB BRIGHT VR** **(R036)** **[CONTROL PWB]**	• The white balance adjustment must be completed. 1. Input the split color bar signal. 2. Adjust the SUB BRIGHT VR so the 0% black section is not bright.



(Fig. A)

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
CONTRAST adjustment 	Signal generator Oscilloscope	TP-47B TP-E1(⏚) [CRT SOCKET PWB]	SUB CONT. VR(R040) [F.CTRL PWB]	1. Input the color bar signal. (There must be 0.525V between the black and white 75% components of the input simgnal). 2. Connect an oscilloscope between TP-47B and TP-E1(⏚). 3. Adjust the SUB CONTRAST VR so the figure level is 27V.
CHROMA adjustment 	Signal generator Oscilloscope	TP-47B TP-E1(⏚) [CRT SOCKET PWB]	SUB PHASE VR (R026) SUB CHROMA VR (R031) [F.CTRL PWB]	1. Input the color bar signal. 2. Connect an oscilloscope between TP-47B and TP-E1 (⏚). 3. Adjust the SUB PHASE VR and arrange the W-M (White and Magenta). 4. Adjust the SUB CHAROMA VR and arrange the W-B (White and Blue). 5. Repeat this procedure alternately with W at the 0 level as shown in the figure until both M and B are at the 0 level.

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
White Balance adjustment (Low Light)	**Signal generator**		**SERVICE SW (S303) [SINGNAL PWB]** **R CUTOFF VR (R313)** **G CUTOFF VR (R323)** **B CUTOFF VR (R333)** **[CRT SOCKET PWB]** **SCREEN VR [In HVT]**	1. Input a monoscope pattern signal. 2. Set the SERVICE SWITCH on the signal board to S (Service) and produce a single horizontal line. 3. Turn the RED, GREEN and BLUE CUT-OFF VR all way to the left. 4. Set the RED DRIVE and BLUE DRIVE VR to the approximate center position. 5. Turn the SCREEN VR gradually to the right from its fully left position unitl a faint horizontal blue, green or red line appears. 6. Turn the CUT-OFF VR about 10° to the right of the first color that appears. Adjust the SCREEN VR again unitl this color appears faintly. 7. Adjust the CUT-OFF VR of the remaining two colors until the combination of the three colors appears white. 8. Set the SERVICE SWITCH to normal (N) and return to the original single horizontal line. 9. Set the screen slightly dark and perform the fine adjustment of the CUT-OFF VR (R.G.B.) to produce the optimal white screen.
White Balance adjustment (High Light)	**Signal generator**		**R DRIVE VR (R314)** **G DRIVE VR (R324)** **[CRT SOCKET PWB]**	1. Input the monoscope pattern signal. 2. Adjust the RED DRIVE and GREEN DRIVE VR so the screen becomes totally white. • If a color temperature measurement device is available, measure the center of the screen with the light receiving section of the device and adjust the RED and GREEN DRIVE VR so the meter reading is D6500°K. 3. Turn the CONTRAST VR and BRIGHT VR and confirm that the white balance tracking is correct from the low light to high light level.

PURITY, CONVERGENCE

PURITY ADJUSTMENT

- Before adjustment
  - Turn the SCREEN VR so the raster not appeared.
  - Set the WHITE-BACK SW(S304) to S side and heat running about 30 minuets, then return the WHITE-BACK SW to N side.
  - Return the SCREEN VR to the original position.

1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedge.
4. Input a Green Raster signal from the Signal Generator, and turn the screen to Green Raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig. 3)
7. Adjust the gap between two lugs so that the Green Raster will come into the center of the screen. (Fig. 4)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and Blue Raster signals, and make sure that purity is properly adjusted.

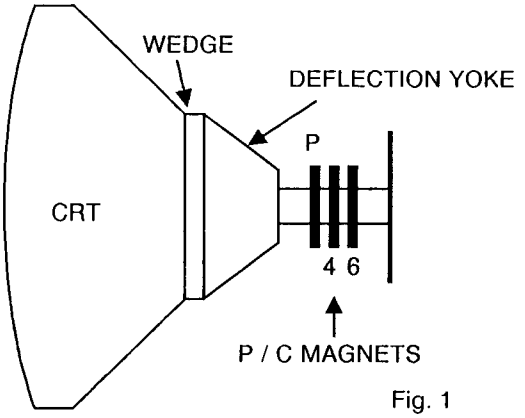


Fig. 1

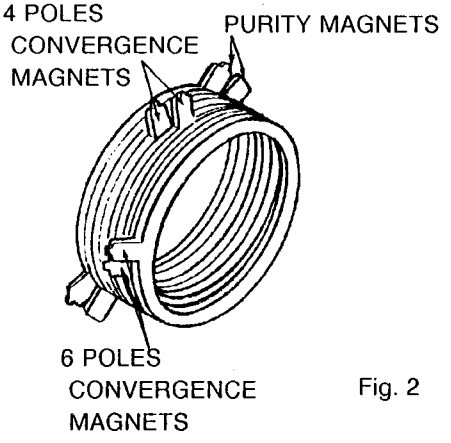
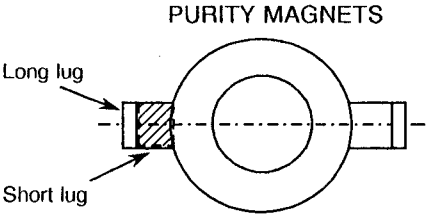


Fig. 2



Bring the long lug over the short lug and position them horizontally.

Fig. 3

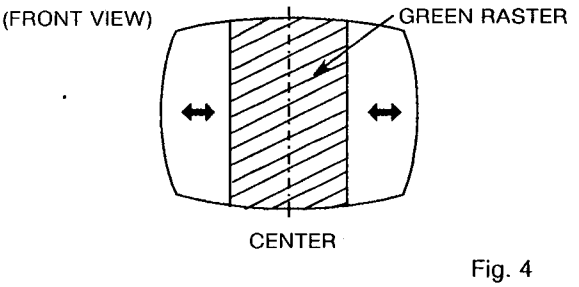


Fig. 4

STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta (red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

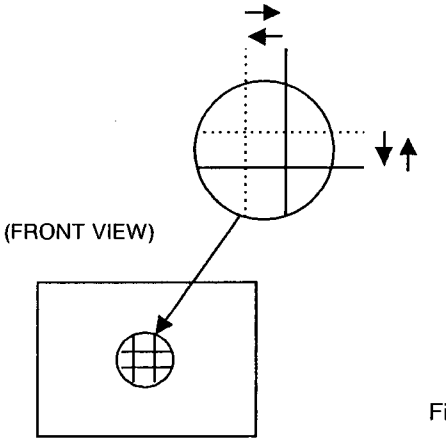


Fig. 1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

(FRONT VIEW)

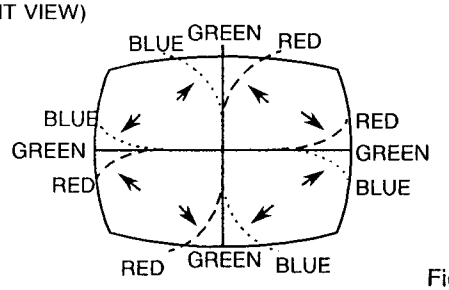


Fig. 2

(FRONT VIEW)

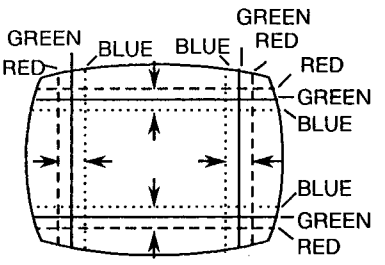


Fig. 3

- After adjustment, fix the wedge at the original position.
  Fasten the retainer screw of the deflection yoke.
  Fix the 6 magnets with glue.

HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repairing the high voltage hold down circuit shown in Fig. 1, this circuit shall be checked to operate correctly.

2. CHECKING OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT.

(1) Make sure that the POWER SWITCH is turned OFF.
(2) As shown in Fig. 1, set the resistor (between [X] connector [1] & [3]).
(3) Turn the POWER SWITCH ON.
(4) Make sure that the screen picture disappears.
(5) Turn the POWER SWITCH OFF.
(6) Remove the resistor between [X] connector [1] & [3]).
(7) After turning the POWER SWITCH ON again, make sure that the normal picture is displayed on the screen.

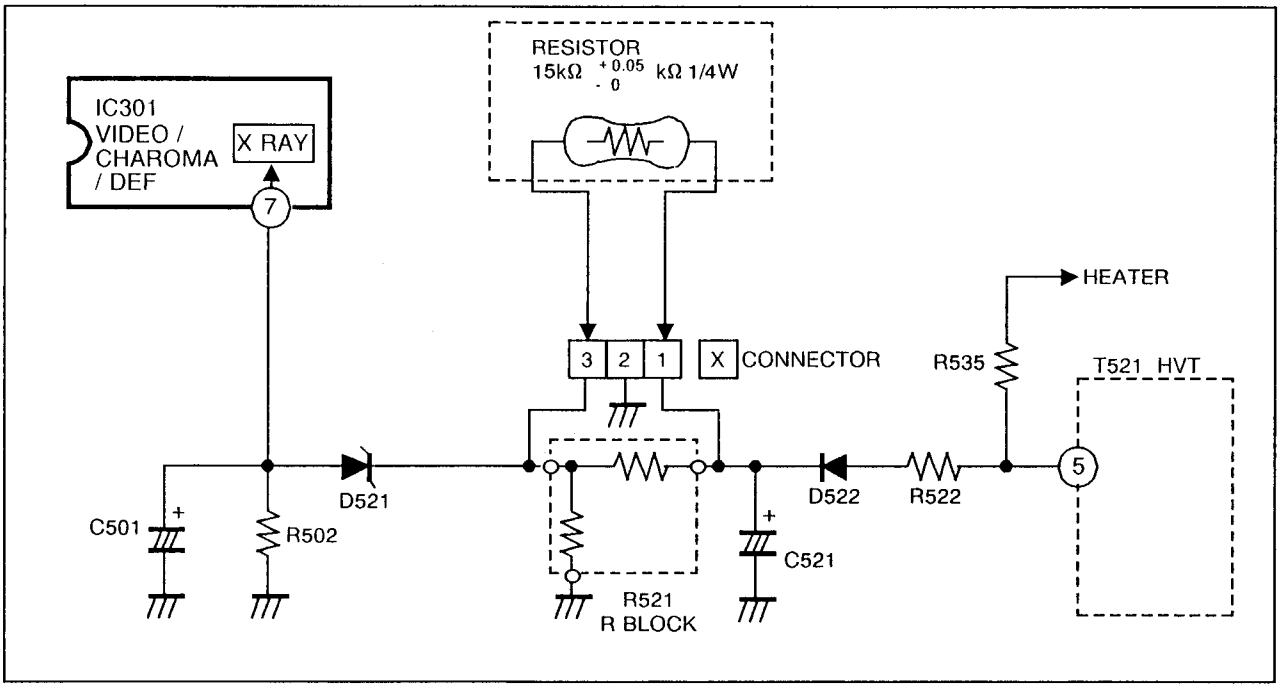


Fig. 1

TM-A9U STANDARD CIRCUIT DIAGRAM

■NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the ⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal :Color bar signal
(2)Setting positions of each knob/button and variable resistor :Original setting position when shipped
(3)Internal resistance of tester :DC 20kΩ/V
(4)Oscilloscope sweeping time :H ⇒20μS/div
:V ⇒5mS/div
:Others ⇒ Sweeping time is specified
(5)Voltage values :All DC voltage values

* Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL[EXAMPLE]

●In the PW board :R1209→R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

●Resistance value
No unit :[Ω]
K :[KΩ]
M :[MΩ]

●Rated allowable power
No indication :1/6[W]
Others :As specified

●Type
No indication :Carbon resistor
OMR :Oxide metal film resistor
MFR :Metal film resistor
MPR :Metal plate resistor
UNFR :Uninflammable resistor
FR :Fusible resistor

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

●Capacitance value
1or higher :[pF]
less than 1 :[μF]

●Withstand voltage
No indication :DC50[V]
Others :DC withstand voltage[V]
AC indicated :AC withstand voltage[V]

* Electrolytic Capacitors
47/50[Example]:Capacitance value[μF]/withstand voltage[V]

●Type
No indication :Ceramic capacitor
MY :Mylar capacitor
MM :Metalized mylar capacitor
PP :Polypropylene capacitor
MPP :Metalized polypropylene capacitor
MF :Metalized film capacitor
TF :Thin film capacitor
BP :Bipolar electrolytic capacitor
TAN :Tantalum capacitor

(3)Coils

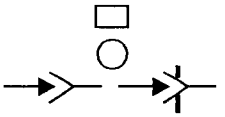
No unit :[μH]
Others :As specified

(4)Power Supply

* Respective voltage values are indicated.

(5)Test Point

(6)Connecting method



(7)Ground symbol

: LIVE side ground
: ISOLATED(NEUTRAL) side ground
: EARTH ground
: DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⏚) side GND. Therefore, care must be taken for the following points.

(1) Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

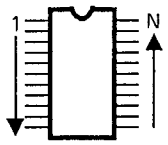
(2) Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

Dec. 1995 No.51062

SEMICONDUCTOR SHAPES

ICs



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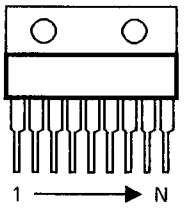
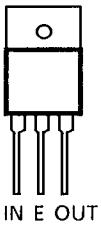
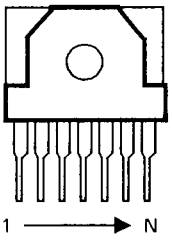
HD74LS00P
HD74LS04P
HD74LS05P
M51413ASP
TC4538BP
TC4053BP
TC4066BP



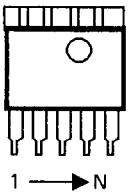
AN5265



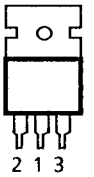
AN7805
AN7809
AN7812F
AN78M15F



LA7830

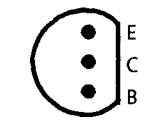


STR-S6707

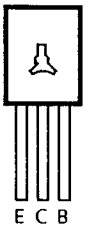


S1854-C1

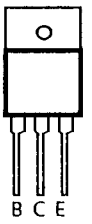
TRANSISTORS



2SA1015(YG)-T
2SA1309
2SA1370(E)
2SA562TM
2SC1472K
2SC1815(YG)-T
2SC1959(Y)
2SC2655(Y)-T
2SC3187-T

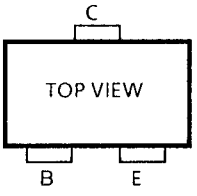


2SC3271(NP)



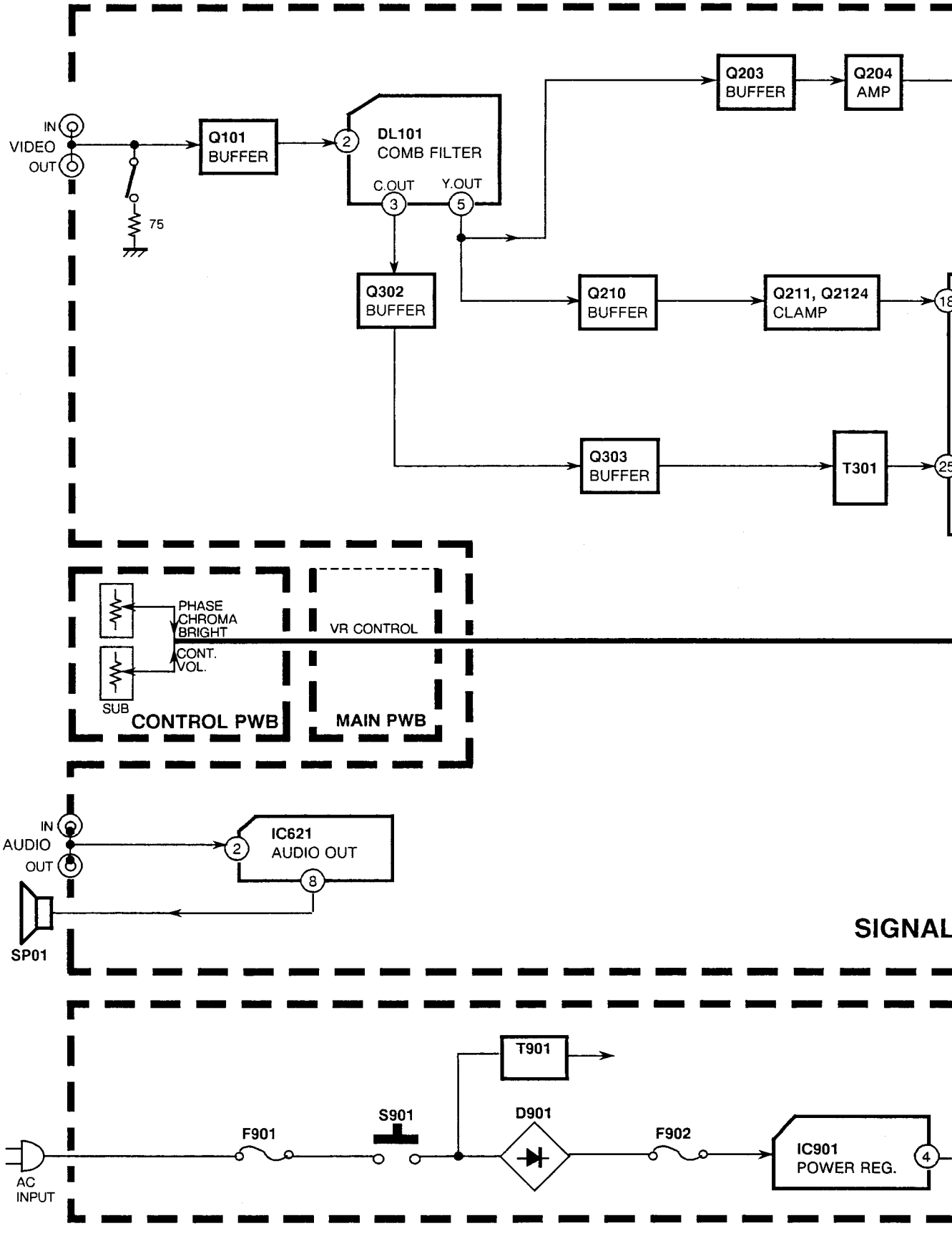
2SD1554-C1

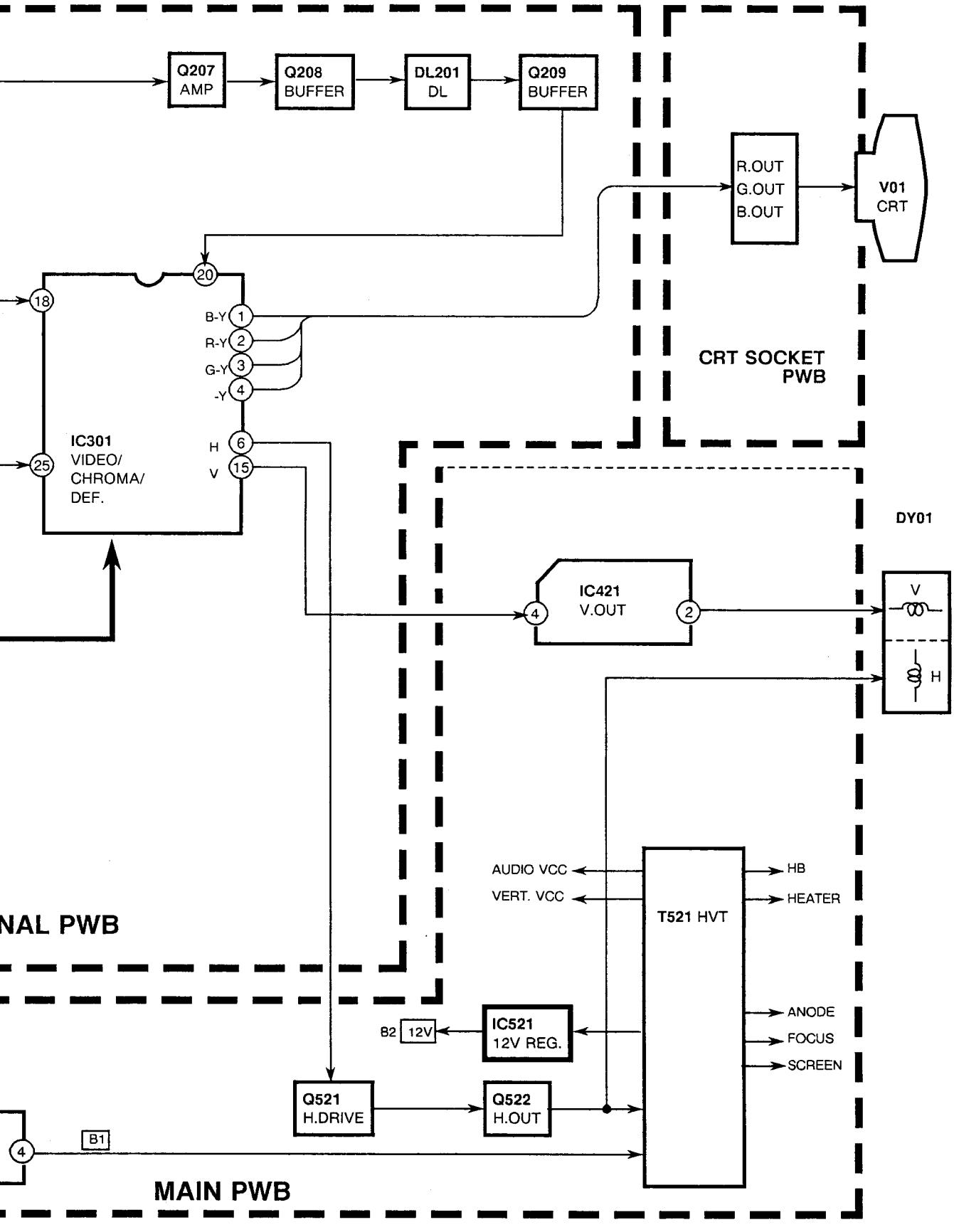
(Chip Transistor)



2SA1037K(QR)
2SA1162(YG)
2SC2412K(QR)
2SC2712(YG)

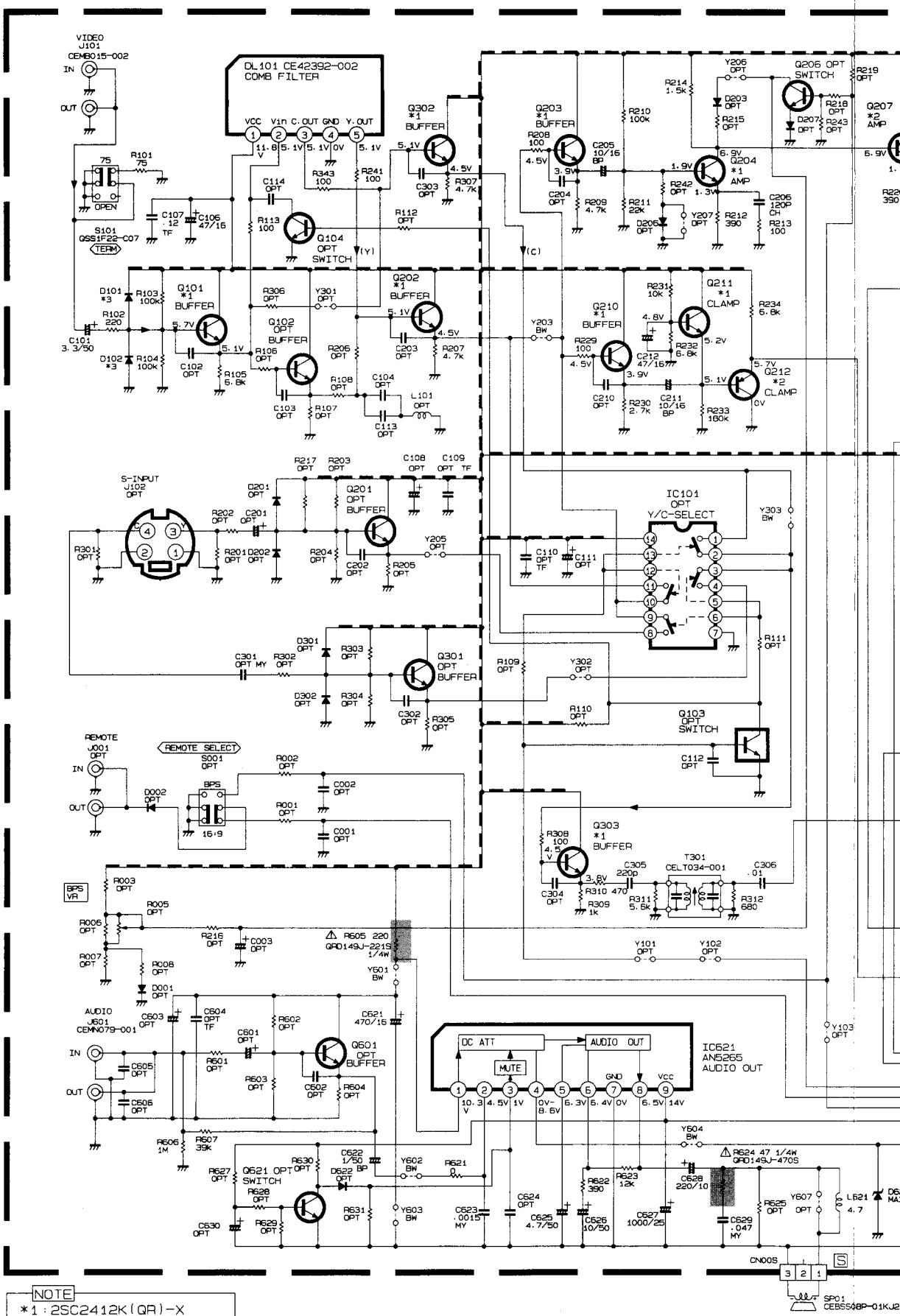
BLOCK DIAGRAM




Q207
AMP
Q208
BUFFER
DL201
DL
Q209
BUFFER
R.OUT
G.OUT
B.OUT
V01
CRT
CRT SOCKET
PWB
20
18
B-Y 1
R-Y 2
G-Y 3
-Y 4
IC301
VIDEO/
CHROMA/
DEF.
H 6
V 15
25
DY01
IC421
V.OUT
4
2
V
H
AUDIO VCC
VERT. VCC
T521 HVT
HB
HEATER
ANODE
FOCUS
SCREEN
B2
12V
IC521
12V REG.
Q521
H.DRIVE
Q522
H.OUT
4
B1
NAL PWB
MAIN PWB

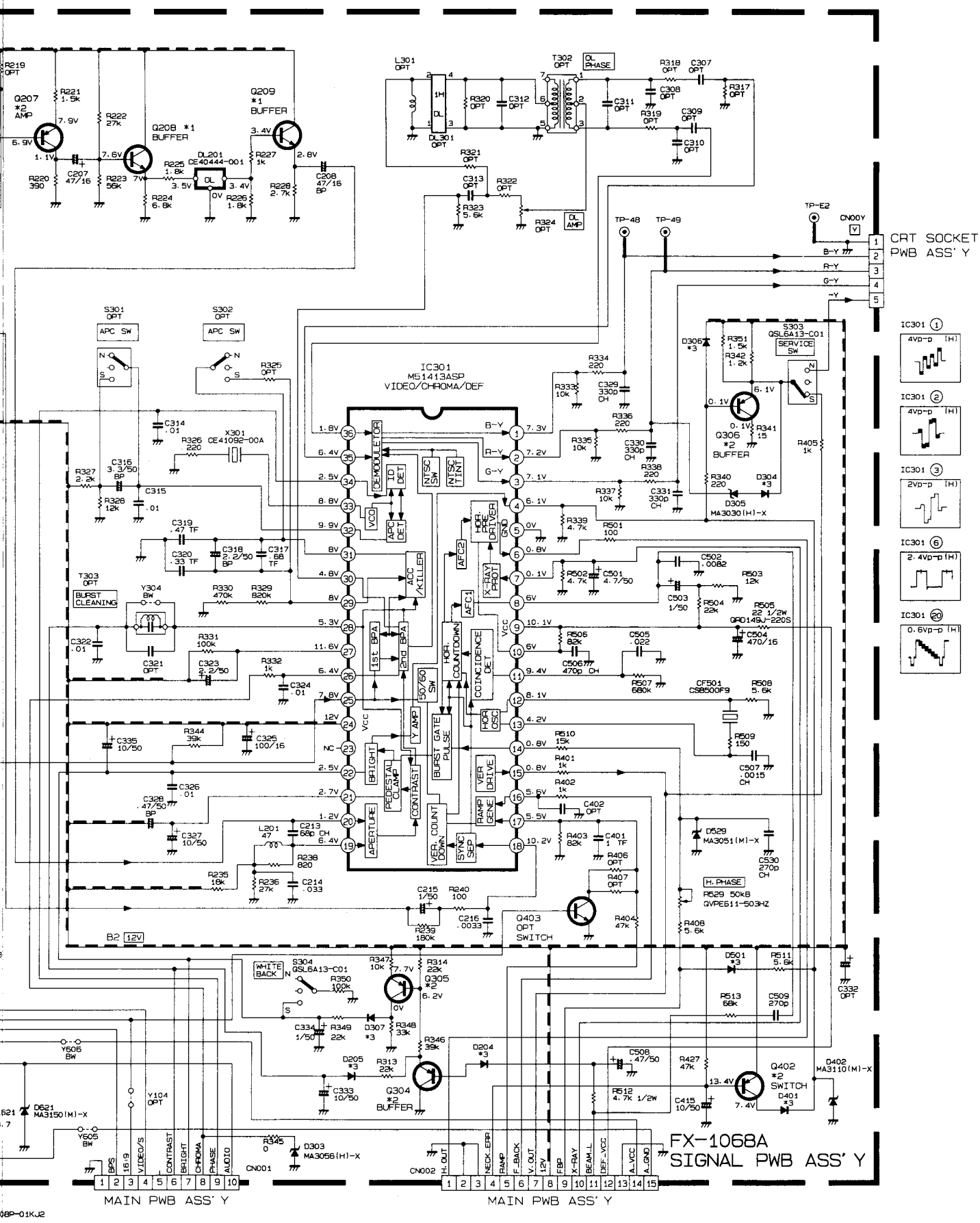
CIRCUIT DIAGRAMS AND PWB PATTERNS

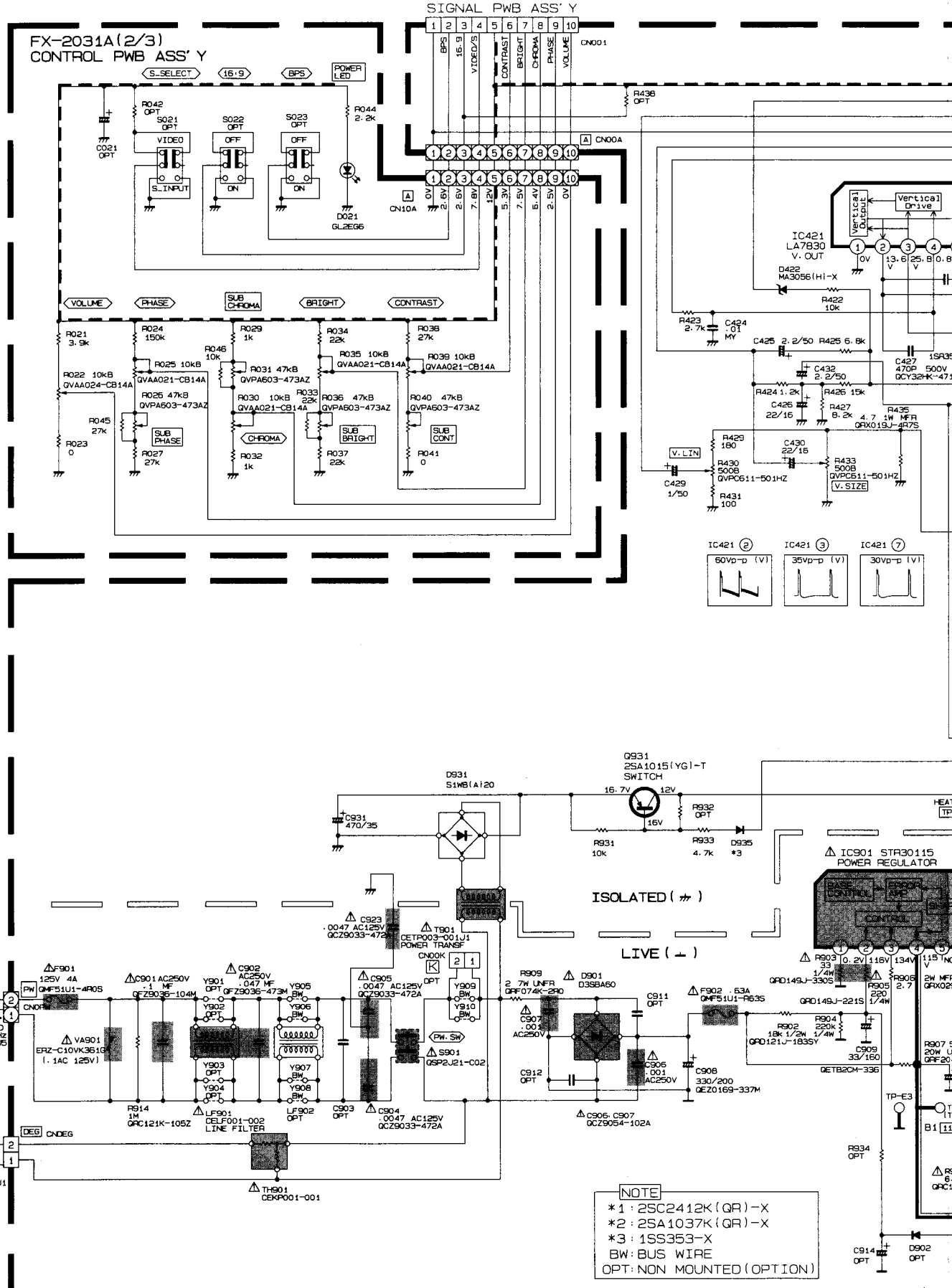
SIGNAL PWB CIRCUIT DIAGRAM



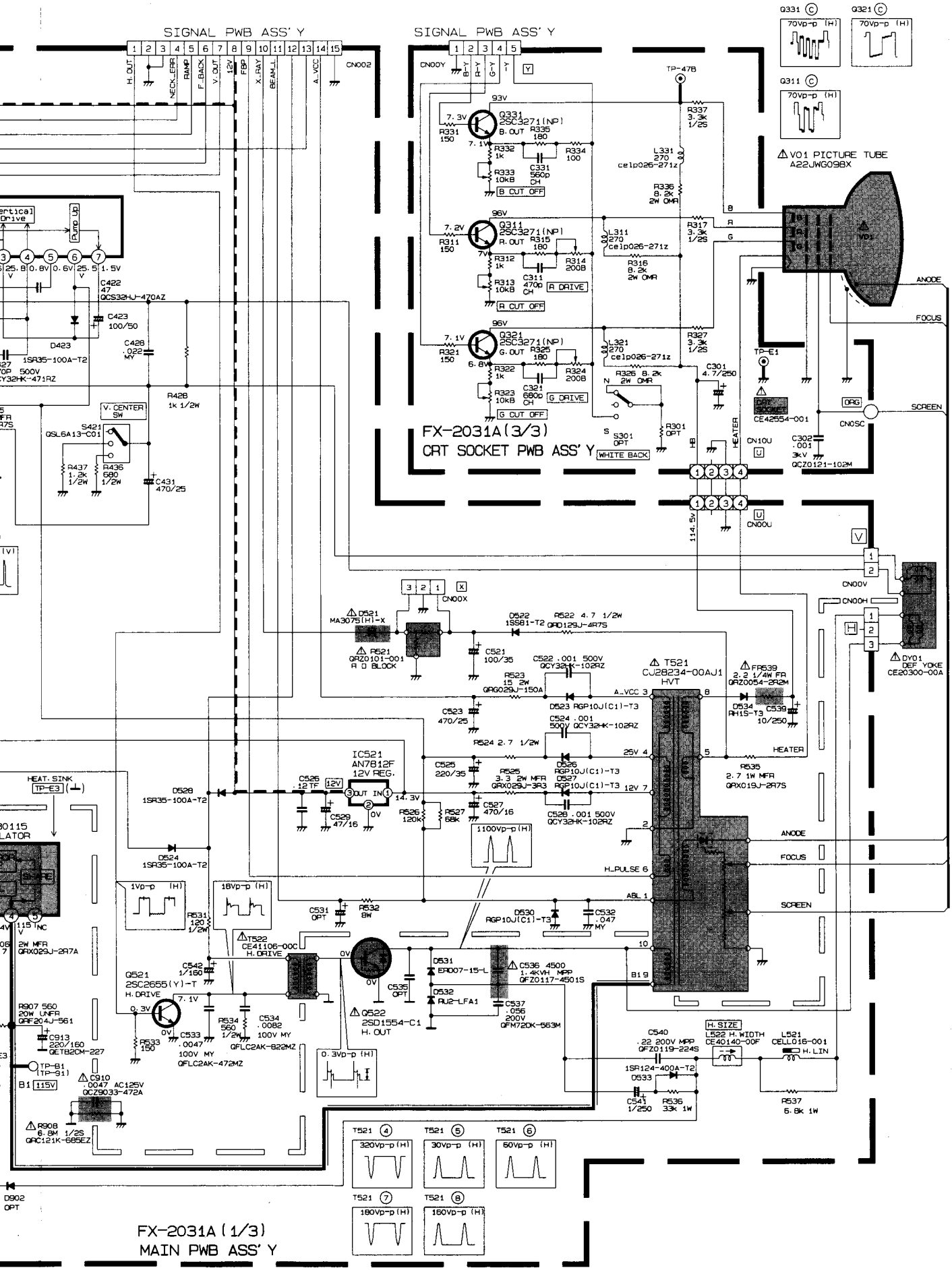
NOTE
*1 : 2SC2412K(QR)-X
*2 : 2SA1037K(QR)-X
*3 : 1SS353-X
BW : BUS WIRE
OPT : NON MOUNTED(OPTION)

Refer to the following PWB pattern : SIGNAL PWB PATTERN page 2-9, 2-10.



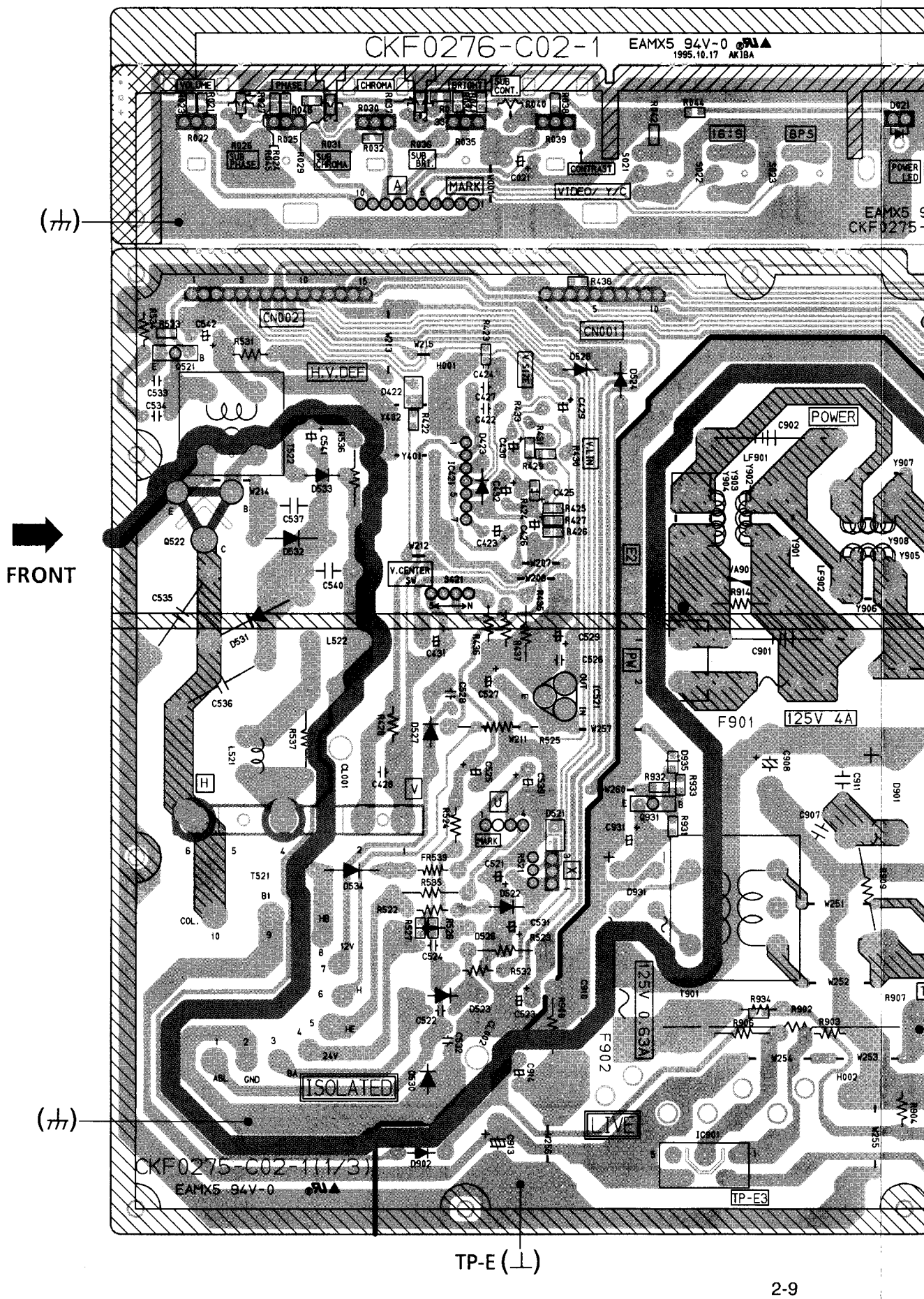

SIGNAL PWB ASS' Y
FX-2031A(2/3)
CONTROL PWB ASS' Y
CN001
S_SELECT
16:9
BPS
POWER LED
VOLUME
PHASE
SUB CHROMA
BRIGHT
CONTRAST
IC421 LA7830 V. OUT
Vertical Drive
Vertical Output
D422 MA3056(Hi-X
V.LIN
V.SIZE
IC421 ②
IC421 ③
IC421 ⑦
60Vp-p (V)
35Vp-p (V)
30Vp-p (V)
Q931 2SA1015(YG)-T SWITCH
D931 S1WB(A)20
ISOLATED (⏚)
LIVE (⊥)
IC901 STR30115 POWER REGULATOR
T901 CETP003-001U1 POWER TRANSF
F901 125V 4A QMF51U1-4R0S
POWER CORD AC120V,60Hz QMP1120-200J5
VA901 ERZ-C10VK361G (.1AC 125V)
LF901 CELF001-002 LINE FILTER
L01 CELD046-001U1 DEG. COIL
TH901 CEKP001-001
S901 QSP2J21-C02
D901 D3SBA60
C905-C907 QCZ9054-102A
TP-E3
NOTE
*1 : 2SC2412K(QR)-X
*2 : 2SA1037K(QR)-X
*3 : 1SS353-X
BW: BUS WIRE
OPT: NON MOUNTED (OPTION)

Refer to the following PWB pattern : MAIN PWB PATTERN(1/3), CONTROL PWB PATTERN(2/3), CRT SOCKET PWB PATTERN(3/3) page 2-9,10.



CONTROL PWB

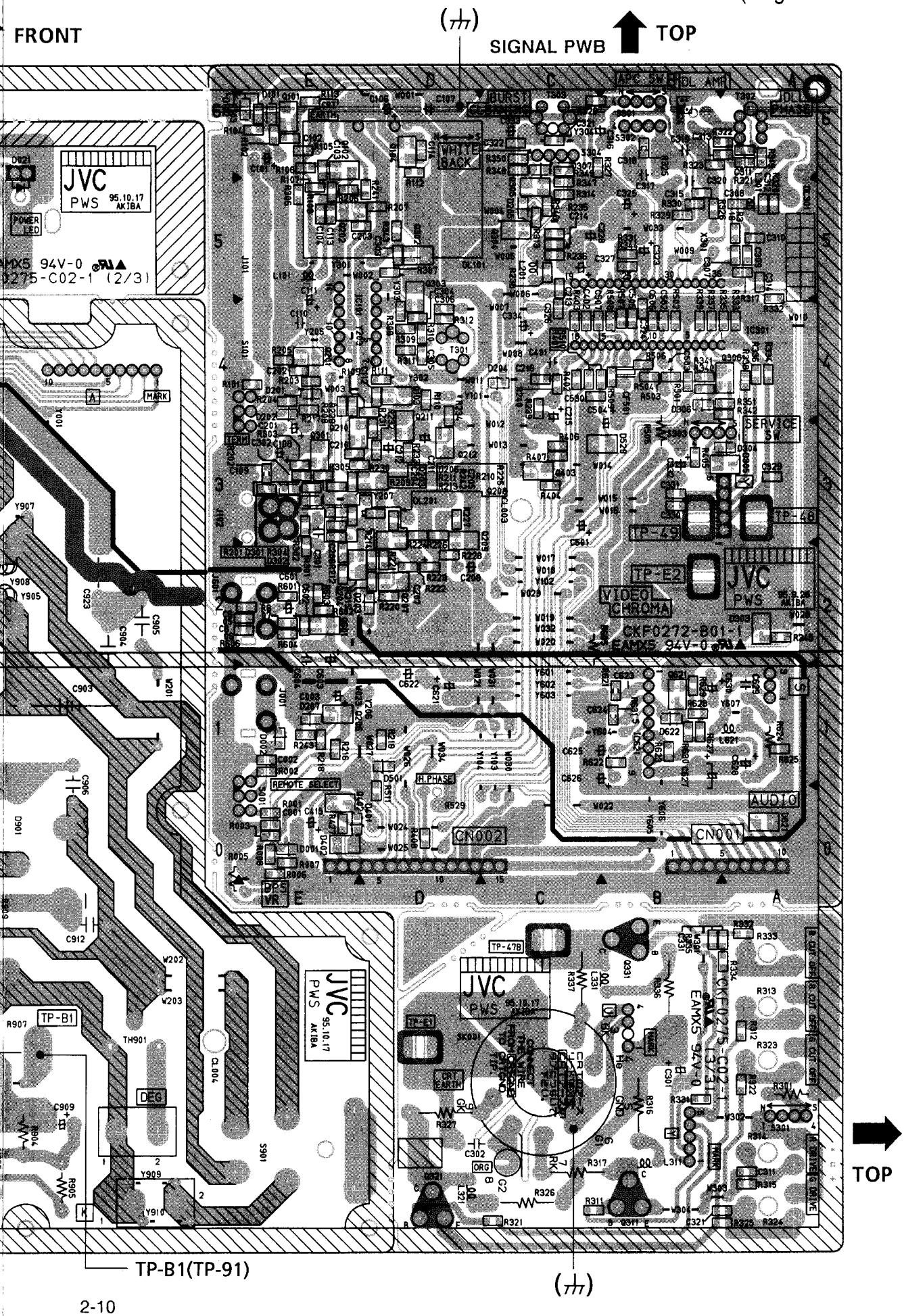
FRO



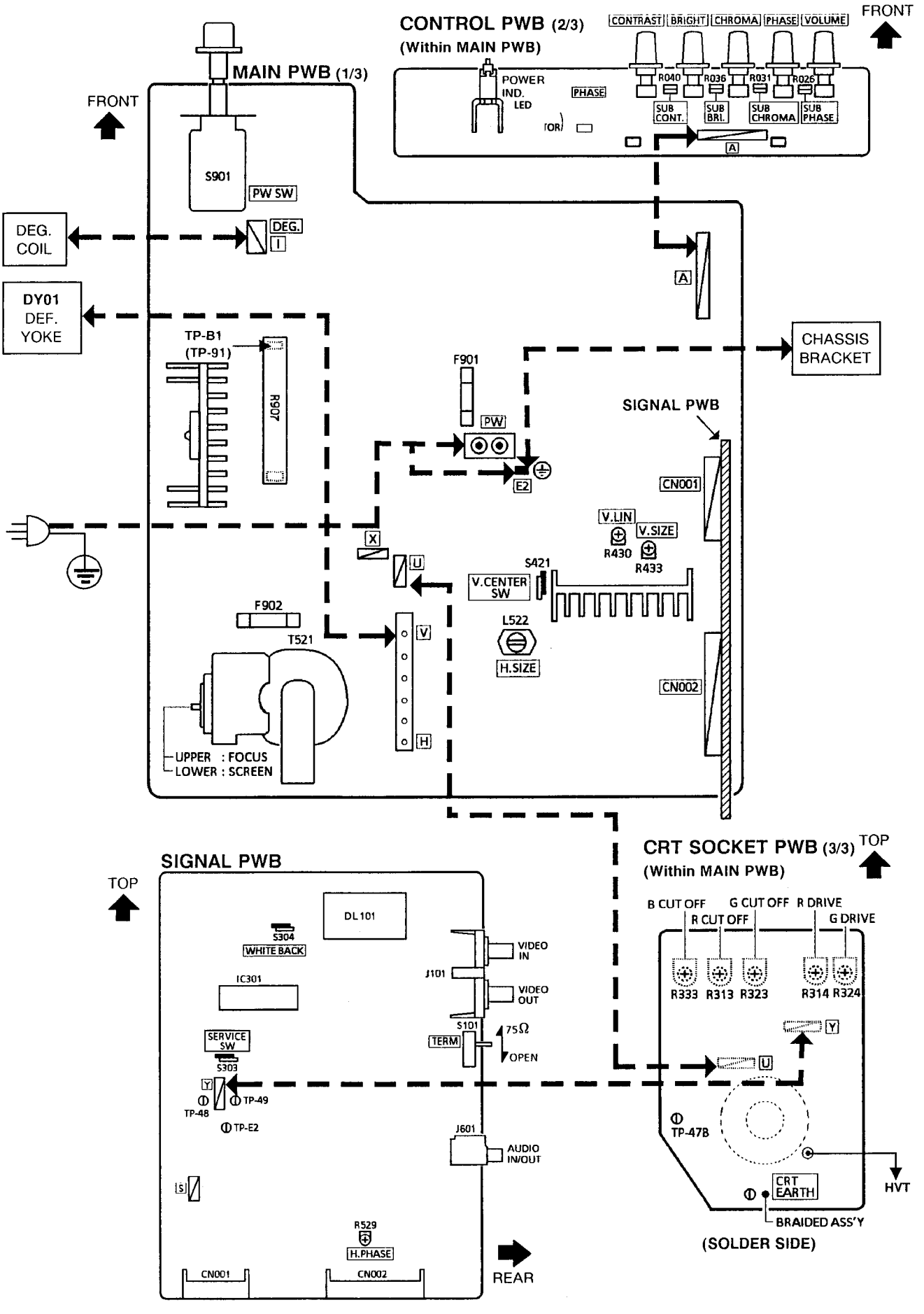
FRONT

TP-E (⊥)

(Magnification Rate 95%)



MAIN PARTS LOCATION AND ALIGNMENTS LOCATION



PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines —— in the Parts No. columns will not be supplied .
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied .
- As a rule, the resistors and capacitors which are indicated as shown in "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board .
  When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" .

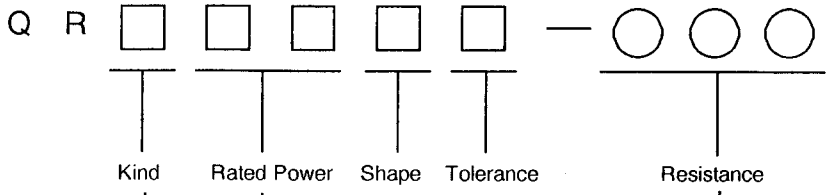
ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% - 10%	+50% - 10%	+80% - 20%	+100% - 0%

HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR



Symbol	Part Name
C	COMP.R
D	C R
S	CH MG R

Symbol	Rated Power
0 1	1 w
1 2	1/2 w
1 4	1/4 w
1 6	1/6 w
1 8	1/8 w

Symbol	Shape
1	Straight lead
8	Chip

Indicate with first two-figure expressed by Ω and following 0.
please note that,in case of resistance less than 10 Ω, a letter "R"will be effective as point.

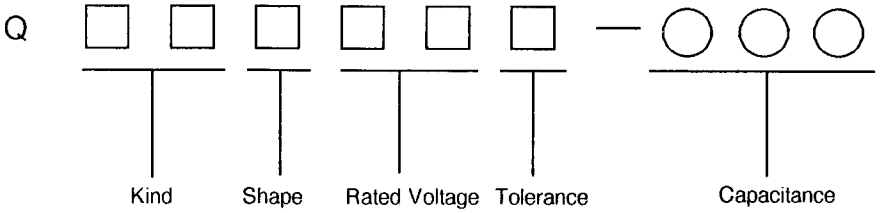
EX.

2.2 Ω = 2R2

470 Ω = 47×10^{1} → 471

150kΩ = 15×10^{4} → 154

■ CAPACITOR



Symbol	Part Name
CS	C CAP.
CS	CH C CAP.
ET	E CAP.
FM	M CAP.

5Figure / 6Figure	0	1	2
A		10V	100V
C		16V	160V
D			200V
E		25V	250V
H		50V	500V
J	6.3V	63V	
V		35V	

Indicate with first two-figure expressed by pF and following 0.
Please note that,in case of capacitance less than 10 pF a letter "R" will be effective as point.

EX

5pF = 5R0

1000pF = 10×10^{2} → 102

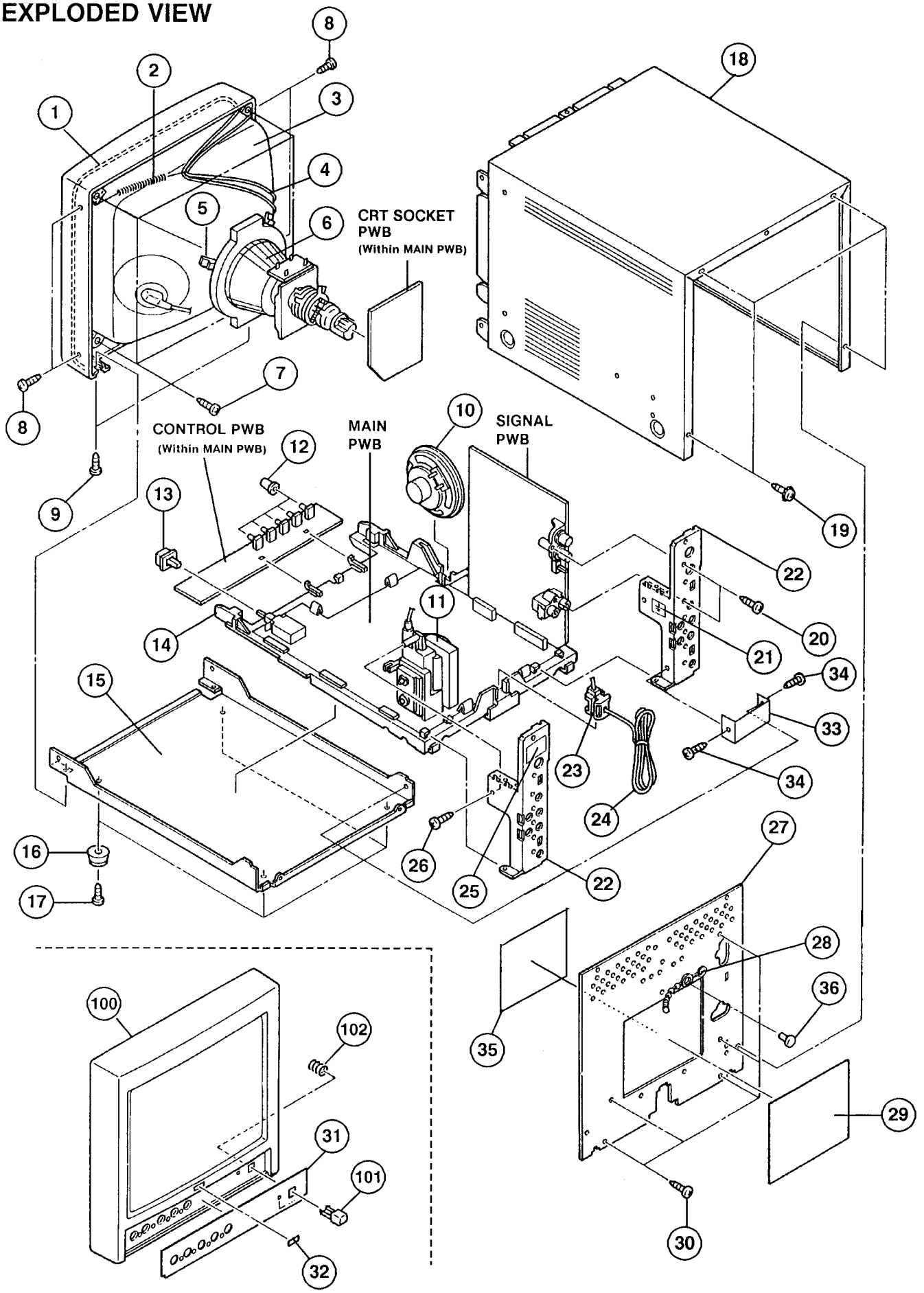
47μF = 47×10^{6} → 476

Symbol	Shape
1	Straight lead
1	Leads in the same direction
8	Chip
A	Leads in the same direction (compact part)

EXPLODED VIEW PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description	Local
⚠	1	CELD046-001J1	DEG.COIL	L01	
	2	CM48174-001	SPRING		
⚠	3	A22JWG098X	PICTURE TUBE	V01	
	4	CHGB0016-0G-N	BRAIDED ASSY		
	5	CE40666-00A	WEDGE ASSY	(×3)	
⚠	6	CE20300-00A	DEF YOKE	DY01	
	7	GBSF4016M	TAPPING SCREW	(×4)	
	8	SDSF3006M	SCREW	(×4)	
	9	GBSB3008Z	TAPPING SCREW	(×2)	
⚠	10	CEBSS08P-01KJ2	SPEAKER	SP01	
⚠	11	CJ28234-00AJ1	HVT	T2521	
	12	CM46758-A01	VOLUME KNOB	(×5)	
	13	CM46115-C01	POWER KNOB		
	14	CM12725-B01-V0	CHASSIS BASE		
	15	CM22942-B01	BOTTOM COVER		
	16	QZF2207-001	FOOT	(×4)	
	17	GBSB3008Z	TAPPING SCREW	(×4)	
	18	CM12726-003	TOP COVER		
	19	CM44287-00C	ASSY SCREW	(×4)	
	20	SBSB3010M	TAPPING SCREW	(×2)	
	21	CM44141-B01	EARTH LABEL		
	22	CM36279-A01	TERMINAL BKT	(×2)	
	23	CM20701-001	CORD BUSHING		
⚠	24	QMP1120-200J5	POWER CORD		
	25	CM41140-001	CAUTION LABEL		
	26	SBSF4012Z	T.SCREW		
	27	CM12727-002	REAR PANEL		
	28	CM48170-001	BEAD TIE		
⚠	29	CM22900-005(R)	ROLL R LABEL		
	30	CM44287-00C	ASSY SCREW	(×5)	
	31	CM22946-003	CONTROL SHEET		
	32	CM48149-A01	JVC MARK		
	33	CM48192-001	CONNECT BKT		
	34	CM44287-00C	ASSY SCREW	(×2)	
	35	CM36241-004	WARNING LABEL		
	36	CM44117-00A	RIVET		
⚠	100	CM12723-C0A-M0	FRONT PANEL ASSY	Inc.No.101～102	
	101	CM46756-A01	POWER KNOB		
	102	CM46757-001	SPRING		

EXPLODED VIEW



PRINTED WIRING BOARD PARTS LIST

SIGNAL PW BOARD ASS'Y (FX-1068A)

⚠	Symbol No.	Part No.	Part Name	Description	Local
	VARIABLE RESISTOR				
	R1529	QVPE611-503HZ	V R(H.PHASE)	50kΩ B	
	RESISTOR				
	R1505	QRD149J-220S	C R	22 Ω 1/4W J	
⚠	R1605	QRD149J-221S	C R	220 Ω 1/4W J	
⚠	R1624	QRD149J-470S	C R	47 Ω 1/4W J	
	CAPACITOR				
	C1107	QFV71HJ-124MZ	TF CAP.	0.12μF 50V J	
	C1205	QEN61CM-106Z	BP E CAP.	10μF 16V M	
	C1206	NCT03CH-121AY	CHIP CAP.	120pF 1600V H	
	C1208	QEN61CM-476Z	BP E CAP.	47μF 16V M	
	C1211	QEN61CM-106Z	BP E CAP.	10μF 16V M	
	C1213	NCT03CH-680AY	CHIP CAP.	68pF 1600V H	
	C1214	NCB21HK-333AY	CHIP CAP.	0.033μF 50V K	
	C1216	NCB21HK-332AY	CHIP CAP.	3300pF 50V K	
	C1305	NCT03CH-221AY	CHIP CAP.	220pF 1600V H	
	C1306	NCB21HK-103AY	CHIP CAP.	0.01μF 50V K	
	C1314-15	NCB21HK-103AY	CHIP CAP.	0.01μF 50V K	
	C1316	QEN61HM-335Z	BP E CAP.	3.3μF 50V M	
	C1317	QFV71HJ-684MZ	TF CAP.	0.68μF 50V J	
	C1318	QEN61HM-225Z	BP E CAP.	2.2μF 50V M	
	C1319	QFV71HJ-474MZ	TF CAP.	0.47μF 50V J	
	C1320	QFV71HJ-334MZ	TF CAP.	0.33μF 50V J	
	C1322	NCB21HK-103AY	CHIP CAP.	0.01μF 50V K	
	C1324	NCB21HK-103AY	CHIP CAP.	0.01μF 50V K	
	C1326	NCB21HK-103AY	CHIP CAP.	0.01μF 50V K	
	C1328	QEN61HM-474Z	BP E CAP.	0.47μF 50V M	
	C1329-31	NCT03CH-331AY	CHIP CAP.	330pF 1600V H	
	C1335	QETB1HM-106	E CAP.	10μF 50V M	
	C1401	QFV71HJ-105MZ	TF CAP.	1μF 50V J	
	C1502	NCB21HK-822AY	CHIP CAP.	8200pF 50V K	
	C1505	NCB21HK-223AY	CHIP CAP.	0.022μF 50V K	
	C1506	NCT03CH-471AY	CHIP CAP.	470pF 1600V H	
	C1507	NCT03CH-152AY	CHIP CAP.	1500pF 1600V H	
	C1530	NCT03CH-271AY	CHIP CAP.	270pF 1600V H	
	C1622	QEN61HM-105Z	BP E CAP.	1μF 50V M	
	C1623	QFLC1HK-152MZ	M CAP.	1500pF 50V K	
	C1627	QEHB1EM-108M	E CAP.	1000μF 25V M	
	C1629	QFLC1HK-473MZ	M CAP.	0.047μF 50V K	
	TRANSFORMER				
	T1301	CELT034-001	B.PASS TRANSF.		
	COIL				
	L1201	CELP026-470Z	PEAKING COIL	47μH	
	L1621	CELP026-4R7Z	PEAKING COIL	4.7μH	
	DIODE				
	D1101-02	1SS353-X	SI.DIODE		
	D1204-05	1SS353-X	SI.DIODE		
	D1303	MA3056(M)-X	ZENER DIODE		
	D1304	1SS353-X	SI.DIODE		
	D1305	MA3030(H)-X	CHIP ZENER DIODE		
	D1306-07	1SS353-X	SI.DIODE		
	D1401	1SS353-X	SI.DIODE		
	D1402	MA3110(M)-X	ZENER DIODE		
	D1501	1SS353-X	SI.DIODE		
	D1529	MA3051(M)-X	ZENER DIODE		
	D1621	MA3150(M)-X	ZENER DIODE		
	DL1101	CE42392-002	COMB FILTER		

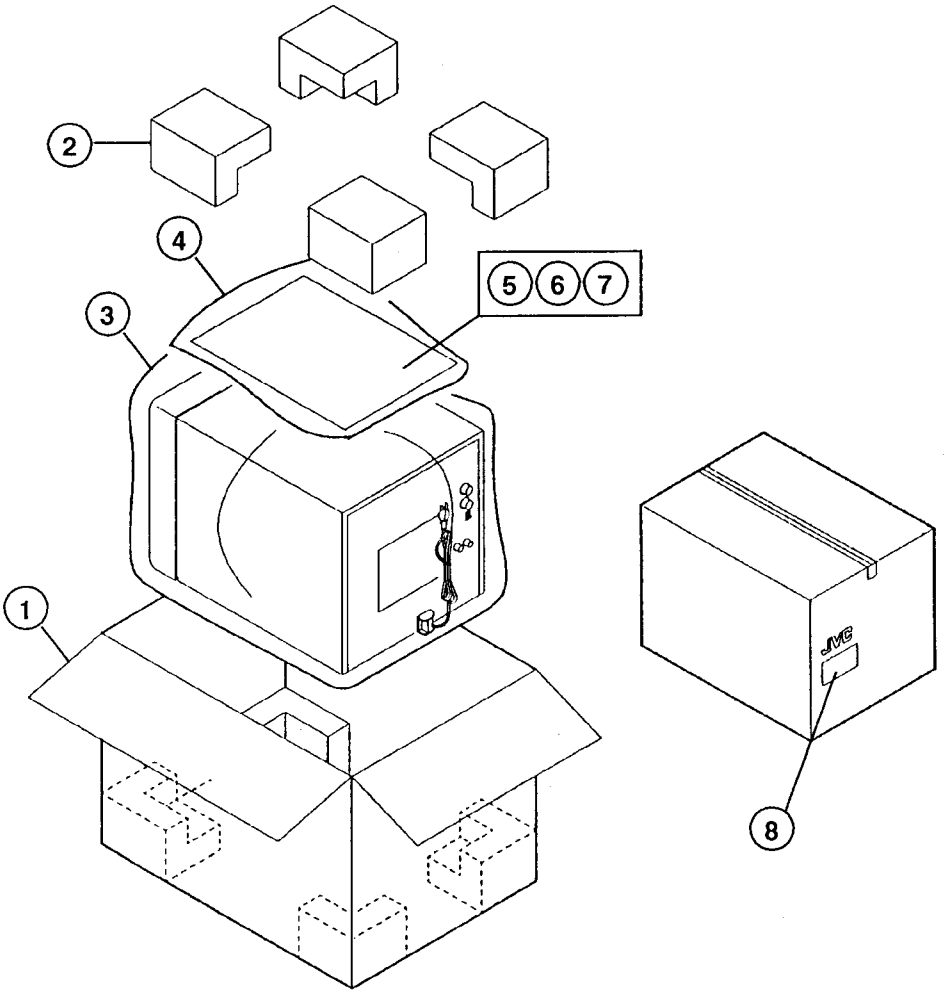
⚠ Symbol No.	Part No.	Part Name	Description	Local
TRANSISTOR				
Q1101	2SC2412K(QR)-X	CHIP TRANSISTOR		
Q1202-04	2SC2412K(QR)-X	CHIP TRANSISTOR		
Q1207	2SA1037K(QR)-X	CHIP TRANSISTOR		
Q1208-11	2SC2412K(QR)-X	CHIP TRANSISTOR		
Q1212	2SA1037K(QR)-X	CHIP TRANSISTOR		
Q1302-03	2SC2412K(QR)-X	CHIP TRANSISTOR		
Q1304-06	2SA1037K(QR)-X	CHIP TRANSISTOR		
Q1402	2SA1037K(QR)-X	CHIP TRANSISTOR		
IC				
IC1301	M51413ASP	I.C.(MONO-ANA)		
IC1621	AN5265	I.C.(MONO-ANA)		
OTHERS				
	FX-1068AIMSA1	IMSA		
CF1501	CSB500F9	CER.RESONATOR		
DL1201	CE40444-001	DELAY LINE		
J1101	CEMB015-002	BNC CONNECTOR		
J1601	CEMN079-002	PIN JACK		
S1101	QSS1F22-C07	SLIDE SWITCH	TERM INATION	
S1303	QSL6A13-C01	LEVER SWITCH	SERVICE SW	
X1301	CE41092-00A	CRYSTAL		

MAIN (1/3), CONTROL (2/3), CRT SOCKET (3/3) PW BOARD ASS'Y (FX-2031A)

⚠	Symbol No.	Part No.	Part Name	Description			Local
		VARIABLE RESISTOR					
	R2022	QVAA024-CB14A	V R(VOLUME)	10kΩ	B		
	R2025	QVAA021-CB14A	V R(PHASE)	10kΩ	B		
	R2026	QVPA603-473AZ	V R(SUB PHASE)	47kΩ	B		
	R2030	QVAA021-CB14A	V R(CHROMA)	10kΩ	B		
	R2031	QVPA603-473AZ	V R(SUB CHROMA)	47kΩ	B		
	R2035	QVAA021-CB14A	V R(BRIGHT)	10kΩ	B		
	R2036	QVPA603-473AZ	V R(SUB BRIGHT)	47kΩ	B		
	R2039	QVAA021-CB14A	V R(CONTRAST)	10kΩ	B		
	R2040	QVPA603-473AZ	V R(SUB CONT)	47kΩ	B		
	R2313	QVPE805-103H	V R(R CUT OFF)	10kΩ	B		
	R2314	QVPE805-201H	V R(R DRIVE)	200 Ω	B		
	R2323	QVPE805-103H	V R(G CUT OFF)	10kΩ	B		
	R2324	QVPE805-201H	V R(G DRIVE)	200 Ω	B		
	R2333	QVPE805-103H	V R(B CUT OFF)	10kΩ	B		
	R2430	QVPC611-501HZ	V R(V.LIN)	500 Ω	B		
	R2433	QVPC611-501HZ	V R(V.SIZE)	500 Ω	B		
		RESISTOR					
	R2316	QRG029J-822A	OM R	8.2kΩ	2W	J	
	R2326	QRG029J-822A	OM R	8.2kΩ	2W	J	
	R2336	QRG029J-822A	OM R	8.2kΩ	2W	J	
	R2435	QRX019J-4R7S	MF R	4.7 Ω	1W	J	
⚠	R2521	QRZ0101-001	R D BLOCK				
	R2522	QRD129J-4R7S	C R	4.7 Ω	1/2W	J	
	R2523	QRG029J-150A	OM R	15 Ω	2W	J	
	R2524	QRD121J-2R7SY	C R	2.7 Ω	1/2W	J	
	R2525	QRX029J-3R3	MF R	3.3 Ω	2W	J	
	R2535	QRX019J-2R7S	MF R	2.7 Ω	1W	J	
	R2536	QRG019J-333S	OM R	33kΩ	1W	J	
	R2537	QRG019J-682S	OM R	6.8kΩ	1W	J	
	R2902	QRD121J-183SY	C R	18kΩ	1/2W	J	
⚠	R2903	QRD149J-330S	C R	33 Ω	1/4W	J	
⚠	R2905	QRD149J-221S	C R	220 Ω	1/4W	J	
	R2906	QRX029J-2R7A	MF R	2.7 Ω	2W	J	
	R2907	QRF204J-561	UNF R	560 Ω	20W	J	
⚠	R2908	QRC121K-685EZ	COMP.R	6.8MΩ	1/2W	K	
	R2909	QRF074K-2R0	UNF R	2.0 Ω	7W	K	
		CAPACITOR					
	C2301	QETC2EM-475Z	E CAP.	4.7μF	250V	M	
	C2302	QCZ0121-102M	C CAP.	1000pF	3000V	A	
	C2311	NCT03CH-471AY	CHIP CAP.	470pF	1600V	H	
	C2321	NCT03CH-681AY	CHIP CAP.	680pF	1600V	H	
	C2331	NCT03CH-561AY	CHIP CAP.	560pF	1600V	H	
	C2424	QFLC1HK-103MZ	M CAP.	0.01μF	50V	K	
	C2428	QFLC1HK-223MZ	M CAP.	0.022μF	50V	K	
	C2521	QETC1VM-107Z	E CAP.	100μF	35V	M	
	C2525	QETC1VM-227Z	E CAP.	220μF	35V	M	
	C2526	QFV71HJ-124MZ	TF CAP.	0.12μF	50V	J	
	C2532	QFLC1HK-473MZ	M CAP.	0.047μF	50V	K	
	C2533	QFLC2AK-472MZ	M CAP.	4700pF	100V	K	
	C2534	QFLC2AK-822MZ	M CAP.	8200pF	100V	K	
⚠	C2536	QFZ0117-4501S	MPP CAP.	4500pF	1.4kVH	±2.5%	
	C2537	QFM72DK-563M	M CAP.	0.056μF	200V	K	
	C2539	QETC2EM-106Z	E CAP.	10μF	250V	M	
	C2540	QFZ0119-224S	MPP CAP.	0.22μF	200V	±3%	
	C2541	QETC2EM-105Z	E CAP.	1μF	250V	M	
	C2542	QETC2CM-105Z	E CAP.	1μF	160V	M	
⚠	C2901	QFZ9036-104M	MF CAP.	0.1μF	AC250V	M	
⚠	C2902	QFZ9036-473M	MF CAP.	0.047μF	AC250V	M	
⚠	C2904	QCZ9033-472A	C CAP.	4700pF	AC125V	M	
⚠	C2905	QCZ9033-472A	C CAP.	4700pF	AC125V	M	

⚠	Symbol No.	Part No.	Part Name	Description	Local
	CAPACITOR				
⚠	C2906	QCZ9054-102A	C CAP.	1000 p FAC250V	Z
⚠	C2907	QCZ9054-102A	C CAP.	1000 p FAC250V	Z
	C2908	QEZ0169-337M	E CAP.	330 µ F 200V	M
	C2909	QETB2CM-336	E CAP.	33 µ F 160V	M
⚠	C2910	QCZ9033-472A	C CAP.	4700 p FAC125V	M
	C2913	QETB2CM-227	E CAP.	220 µ F 160V	M
⚠	C2923	QCZ9033-472A	C CAP.	4700 p FAC125V	M
	TRANSFORMER				
⚠	T2521	CJ28234-00AJ1	HV TRANSF.		
⚠	T2522	CE41106-00C	DRIVE TRANSF.		
⚠	T2901	CETP003-001J1	POWER TRANSF.		
	COIL				
	L2311	CELP026-271Z	PEAKING COIL	270 µ H	
	L2321	CELP026-271Z	PEAKING COIL	270 µ H	
	L2331	CELP026-271Z	PEAKING COIL	270 µ H	
	L2521	CELL016-001	LINIARITY COIL		
	L2522	CE40140-00F	WIDTH COIL		
	DIODE				
	D2021	GL2EG6	L.E.D.(GRN)	POWER LED	
	D2422	MA3056(H)-X	ZENER DIODE		
	D2423	1SR35-100A-T2	SI.DIODE		
⚠	D2521	MA3075(H)-X	ZENER DIODE		
	D2522	1SS81-T2	SI.DIODE		
	D2523	RGP10J(C1)-T3	SI.DIODE		
	D2524	1SR35-100A-T2	SI.DIODE		
	D2526-27	RGP10J(C1)-T3	SI.DIODE		
	D2528	1SR35-100A-T2	SI.DIODE		
	D2530	RGP10J(C1)-T3	SI.DIODE		
	D2531	ERD07-15-L	SI.DIODE		
	D2532	RU2-LFA1	SI.DIODE		
	D2533	1SR124-400A-T2	SI.DIODE		
	D2534	RH1S-T3	SI.DIODE		
⚠	D2901	D3SBA60	DIODE BRIDGE		
	D2931	S1WB(A)20	SI.DIODE		
	D2935	1SS353-X	SI.DIODE		
	TRANSISTOR				
	Q2311	2SC3271(NP)-C1	SI.TRANSISTOR		
	Q2321	2SC3271(NP)-C1	SI.TRANSISTOR		
	Q2331	2SC3271(NP)-C1	SI.TRANSISTOR		
	Q2521	2SC2655(Y)-T	SI.TRANSISTOR		
⚠	Q2522	2SD1554-C1	SI.TRANSISTOR	H.OUT	
	Q2931	2SA1015(YG)-T	SI.TRANSISTOR		
	IC				
	IC2421	LA7830	I.C.(MONO-ANA)		
	IC2521	AN7812F	I.C.(MONO-ANA)		
⚠	IC2901	STR30115	I.C.(H)		
	OTHERS				
		CM46978-A01-H	L.E.D.HOLDER		
⚠	F2901	QMF51U1-4R0S	FUSE	4.0A	
⚠	F2902	QMF51U1-R63S	FUSE	0.63A	
⚠	FR2539	QRZ0054-2R2M	F R	2.2 Ω 1/4W J	
⚠	LF2901	CELF001-002	LINE FILTER		
	S2421	QSL6A13-C01	LEVER SWITCH	V.CENTER SW	
⚠	S2901	QSP2J21-C02	PUSH SWITCH	POWER SWITCH	
⚠	SK2001	CE42554-001	CRT SOCKET		
	S2304	QSL6A13-C01	LEVER SWITCH	WHITE BACK	
⚠	TH2901	CEKP001-001	P.THERMISTOR		
⚠	VA2901	ERZ-C10VK361G	VARISTOR		

PACKING



PACKING PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description	Local
	1	CP11224-A18	PACKING CASE		
	2	CP11460-A0A	CUSHION ASSY	8pcs in 1set	
	3	QPGA060-06005	POLY BAG		
	4	QPGA025-03505	POLY BAG		
⚠	5	CQ40054-001	INST BOOK		
	6	BT-51008-1	WARRANTY CARD		
	7	BT-20104A	SERVICE INF CARD		
	8	CM21428-00A	REC KEEPING CARD		

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